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Editor, Layout, & Design

Michael Frizell is the Director of Student Learning Services at Missouri State University. In this position, he helped lead a team that developed the Bear CLAW (Center and Learning and Writing), growing it from a standalone Writing Center to a dynamic modern learning center. Since 2012, he has served as the editor of *The Learning Assistance Review,* the peer-reviewed journal of the International College Learning Center Association, and their book, *Learning Centers in the 21st Century.* At the height of the COVID-19 crisis, Frizell collected the stories of learning center leaders across the country into the book *Rising to the Challenge: Navigating COVID-19 as Higher Education Learning Center Leaders.* He has been ICLCA's corresponding secretary and was president twice. He is also on the editorial team for *RiLADE* and serves as Vice Chair of CLADEA. In addition, he is an ICLCA Certified Learning Center Professional, Level 4 (Lifetime), and a CLADEA Fellow. He is a prolific speaker, presenting hundreds of workshops and informative speeches, guest-starring in podcasts, radio and television shows, and more.

He holds an M.A. in theatre and creative writing from Missouri State University and an M.F.A. in creative nonfiction from the University of Arkansas at Monticello. His work has been published in the National Gallery of Writing, *Red Ink Journal*, *The Moon City Review, Saddlebag Dispatches, The Good Men Project,* and more. As a writer for TidalWave Comics, he has written over 100 comic books based on famous people. Recent publications include biographies of Dolly Parton, Taylor Swift, Billie Eilish, Selena, Pete Buttigieg, Kamala Harris, and Stacey Abrams, and supplements to Netflix's *Tiger King*. His fiction comics include *Stormy Daniels: Space Force* and *The Fantasy World of Bettie Page* and feature the authorized likenesses of the actresses. Frizell's graphic novel *Bender* explored the backstory of America's first serial killer family from the Midwest. It was serialized in *Saddlebag Dispatches* magazine, collected in 2018, and featured on many true crime podcasts. He is also the writer of *Spellbinder*, a modern retelling of the Harold Robbins novel. Last year, he was featured on *All Things Considered* for his comic book biography of basketball player Brittney Griner.

About *The Learning Assistance Review*

The Learning Assistance Review is an official publication of the International College Learning Center Association (ICLCA). NCLCA serves faculty, staff, and students working in learning assistance at two- and four-year colleges, vocational and technical schools, and universities.

ICLCA's Definition of a Learning Center

The International College Learning Center Association defines a learning center at higher education institutions as interactive academic spaces that reinforce and extend student learning in physical and virtual environments. These environments offer comprehensive support services and programs to enhance student academic success, retention, and completion rates by applying best practices and learning theory while addressing student learning needs from multiple pedagogical perspectives. Staffed by professionals, paraprofessionals, faculty, and trained student educators, learning centers are designed to reinforce the holistic academic growth of students by fostering critical thinking, metacognitive development, and educational and personal success.

Editorial Board

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Letter from the Editor

Michael Frizell
Missouri State University

My career in student success began in 2000 when I was hired fresh out of my second master's degree in Creative Writing to teach study skills in the Collegiate Reading and Learning Program. Tasked with studying the study skills habits of our students while writing curriculum for new courses, I struggled at first, wondering if I'd made the correct decision. Aided by Walter Pauk's book, *How to Study in College,* I started to understand the nuances of how a strong foundation in study skills could lead to success in college and career for my students. My undergraduate and first master's degrees were in theatre performance, so I assumed I'd talked myself into a job I wasn't qualified to do. I later discovered that my dominant StrengthsFinder theme was WOO (Winning Others Over), a social intelligence theme with the capacity to inspire and motivate others, a trait in conflict with my pervasive imposter syndrome.

Four years into my work, Southwest Missouri State University decided it was time to "go national," changing its name to Missouri State University while realigning its acceptance practices to accept "better students" (please note the hostile air quotes). In their infinite wisdom, the powers in the President's Office declared that study skills courses were no longer necessary, arguing that we'd be

admitting students who didn't need them. Ignoring the pleas of a junior faculty member working out of the basement of a former childcare center, they folded my program and asked me to apply for one of three jobs. Our summer orientation program, SOAR, didn't interest me, and the thought of working as the director of the First-Year Programs office left me cold, so I applied for the university's broken Writing Center. The former director had been dismissed, and the center was wallowing. I was tasked with rebuilding it.

I understood the critical need for a dual-pronged strategy to shape perceptions and cement the Writing Center's pedagogical identity. Aligning it with faculty expectations was imperative, contributing to student success. We aimed to portray it as a valuable resource catering to novice and seasoned writers. Ensuring these perceptions resonated with the actual work of our consultants was paramount. During those formative stages, I donned a suit, tie, and sneakers and traversed the campus corridors, infiltrating departmental gatherings and engaging faculty members across various settings. With pen poised above my notebook, I posed a singular query: "How can our Writing Center best support you?"

Four years later, we went from serving about 750 students to nearly 5,000 students a semester. Graduate students accounted for 24% of our client base, while first-year students comprised only 18%. Our team had grown from two receptionists and six writing consultants to six receptionists, twenty undergraduate, and six graduate writing consultants, alongside a support staff of graduate students conducting Writing Fellows programming. Our satisfaction rate with the student body was nearly 100%, and over 80 faculty members used our services for their publishing endeavors. While our accomplishments were evident, they also brought about increased scrutiny from faculty and administration. They also saw the need for something new. Lines out the door of the modified classroom I used as a center weren't enough. Thus, the Bear CLAW (Center for Learning and Writing) was born.

This modern learning center united tutoring, Supplemental Instruction, research librarians, and the Writing Center into a dynamic, interactive space designed to give the ever-increasing student body a place to turn when their learned behaviors failed them. As the CLAW grew, so did my career. I was named the editor of this journal twelve years ago. I serve as an editor for *Research in Learning Assistance and Developmental Education,* the peer-reviewed publication of the Council of Learning Assistance and Developmental Educations Associations, and Missouri State University's *EJournal of Public Affairs.* I've twice served as the president of the International College Learning Center Association and am the current vice chair of CLADEA. I've had hundreds of publications, spoken at dozens of national and international

conferences, and managed to grow our modest Writing Center into a thriving learning center with almost two hundred student employees.

All the while, my imposter syndrome nags me, telling me I'm in the wrong profession, arguing that I've talked myself into a role ill-suited to my skill set. If I made any mistake in my career, it was convincing the administration that I didn't need a staff of professionals to succeed, only a partner, an administrative assistant, and our students.

On March 18, 2024, I was named the 69th CLADEA Fellow. CLADEA defines the honorific on its website like this:

> "The Council spurs excellence by recognizing and honoring the most outstanding leaders in the profession. Fellows are selected based on their long-term and significant contributions to the field. Selection as a Fellow represents the highest honor conferred upon professionals in learning assistance, tutoring, and developmental education. Individuals selected as Fellows must be nominated by at least two current Fellows or by a member association."

Here's the heavy plaque:

The night before the ceremony, Russ Hodges, Editor of the *Journal of College Academic Support Programs,* a pioneer in the field of developmental education and a CLADEA Fellow, regaled me with the credentials of those named Fellows before me. The imposter syndrome started whispering its poison again as he talked about David Arendale, Lucy MacDonald, Frank Christ, Saundra McGuire, Jane Neuburger, and many others I don't have the space to list who blazed the trail. One of those names is Walter Pauk, whose work I taught my first students.

The plaque hangs in my office next to the medal I am to wear whenever CLADEA-kindred organizations gather.

To thank everyone who supported me in my 24-year journey in higher education would be impossible. Aside from my institution, my colleagues in ICLCA, the CLADEA Fellows, and you, the reader of this journal, I'd need to list every student who taught me the power of this work. It's about them, after all, and I know many of them fight the imposter monster as much as I do. They should know that I'm still fighting that feeling of being the "little kid in the room" wherever professionals in this field gather, and I hope that makes me a strong advocate for them.

Michael Frizell

March 22, 2024

Understanding Frequency of and Time Spent on Editing in Writing Center Tutorials

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Abstract

This longitudinal study serves as a model for examining and understanding the role of editing and its contributing factors in writing center tutorials. The study quantifies the frequency of and time devoted to editing in over 4,000 writing center tutorials and finds these quantities differ in statistically significant ways when broken down by user groups (gender, student standing, course level, and primary language); tutoring modes (face-to-face, synchronous-online, and asynchronous); and time of student visit relative to project due date. Analysis identifies contributing factors that influence frequency of and time spent on editing in tutorials by these groups, including group membership and their associated editing practices and tutorial habits. The study's findings fill an important gap in our understanding of what takes place in writing center tutorials and have significant implications for tutor training and marketing of writing center services.

Keywords: college teaching, educational assessment, writing centers, editing

Understanding Frequency of and Time Spent on Editing in Writing Center Tutorials

I have worked in writing centers for over thirty years and, before that, used them as a student. For much of that time, especially the early years of my career, editing in tutorials was frowned upon. One reason for this was political. In those days, writing centers often had to fight for legitimacy in the academy by dispelling false perceptions held by members of our wider university communities who, as Stephen North (1984) lamented, "do not understand what does happen, what can happen, in a writing center" (p. 433). One of the most ubiquitous misperceptions was that writing centers were editing shops where tutors wrote students' papers for them, which many outsiders viewed as plagiarism. As Irene Clark (1988) noted, "even a casual glance at writing center publications suggests that avoiding charges of plagiarism and justifying writing center pedagogy constitutes a prime concern for writing center directors" (p. 4). As a result, many writing centers developed public mantras like "better writers, not just better papers" that de-emphasized the role of editing in our work.

Another reason for de-emphasizing editing was pedagogical. The rise of non-directive tutoring and process-oriented writing instruction increasingly made editing taboo in tutorials. In his oft-cited article, Minimalist Tutoring: Making the Student Do All the Work, Jeff Brooks (1991) explains why: "When you "improve" a student's paper, you haven't been a tutor at all; you've been an editor" and "of little service to your student" given that "the goal of each tutoring session is learning, not a perfect paper" (p. 2). In Grammar Redeux, Redeux, Redeux, Michael Pemberton (1995) anecdotally provided another reason for avoiding editing: "some student writers continue to make grammatical mistakes in their writing even after coming to the writing center for assistance" (p. 6), a point that would be confirmed later by formal studies by Truscott and Hsu (2008).

Writing center staff also didn't focus on editing in tutorials because, in many cases, it wasn't the most pressing issue in students' writing, and time was better spent making sure students were following their assignments properly; presenting clear theses; supporting those theses with coherent, well-organized arguments; or simply communicating what they wanted to say. Over the years, tutor trainings and staff meetings routinely addressed questions of when to edit or how much to edit. We were always trying to find the right balance for spending time on editing as if we were adjusting stereo speaker settings to achieve just the right sound. We

frowned upon editing, but we certainly did some of it—and sometimes a lot of it. Just how much was never quite clear.

Fast forward thirty years, as director of a university writing center, I was performing semesterly writing center reports and started noticing that the frequency of editing occurring in tutorials had risen considerably from prior years. Because I had designed tutor reports to present the frequency of various writing tasks, including editing, I saw that over a few semesters, editing was on the rise and that the frequency with which students were performing non-editing tasks, like developing and organizing ideas, was decreasing by comparison. This trend gave me cause for concern. I feared that, for whatever reason, by focusing on editing issues in greater frequency, my tutors weren't providing students with the kind of help they really needed most. In my assessments to the administration, I reported this finding and vowed to be on watch to see if it would become a trend. I not only monitored it, but to get a clearer idea of what role editing was playing in tutorials, I incorporated another element into tutor reports so that I could see not only how often tutors and students worked on editing in their sessions but also find out how long they did so. The results of this assessment led to the study that follows, and, more importantly, provided me with a means for evaluating the situation, understanding why it

was occurring, and developing a plan for what I could do about it.

Concern about the role that editing and language instruction should, or should not, play in tutorials has been a prominent theme in writing center literature. What seems clear is that debates about the place of editing in writing tutorials—the extent to which tutors should address grammar, mechanics, usage, and concision of language—have largely coincided with the expansion and diversification of student bodies, the introduction of new pedagogical approaches to the teaching of writing, and the arrival of new educational technologies to the writing center.

This study's purpose is not to explore the individual arguments within this conversation or debate their validity; instead, it is to perform three other tasks. The first is to acknowledge that—despite the sometimes-contentious debate about the role of editing—our field has produced little quantitative research examining how frequently editing of ideas, language, or mechanics actually occurs in tutorials or how much time is devoted to these tasks. Only a handful of articles have presented longitudinal studies looking at either the frequency of editing, the percentage of tutorials in which editing occurs, or the proportion of time devoted to editing within tutorials, but none looks at both together.

Two previous studies I have conducted studies have examined the frequency of editing in writing center tutorials. In a 2009 study of over 3,200 tutorials, tutors reported that "editing mechanics"

occurred in 49.4% of all tutorials, while "editing ideas/language" took place in 38.2% of those tutorials (Enders, 2009, p. 10). My subsequent study of 2,390 non-EAL tutorials in 2013, tutors reported working on editing mechanics in 53% of tutorials and editing ideas/language in 57% (Enders, 2013, p. 7). Both studies determined that editing was the most frequently performed writing task in tutorials.

Two other studies in the writing center field have looked at the amount of time devoted to editing in tutorials. A 2004 study of 626 tutors reported that the tutors spent 40.1% of their tutorial time on what we have described here as editing (Gaskins, 2004, p. 13), and a 2007 study of 296 tutors from writing centers around the world declared that 50% of those tutors reported they spent between 26 and 34% of their time editing and the other 50% roughly between seven and 17% (Schendel, 2007, p. 2).

The primary task of my current study is to fill in this knowledge gap by presenting the results of a four-year longitudinal study conducted at a university writing center of a small, private research institution that quantifies the frequency of, and time devoted to, editing in writing center tutorials by various user groups (gender, student standing—graduate/undergraduate, course level, and primary language); tutoring modes (face-to-face, synchronous-online, and asynchronous); and time of student visit relative to project due

date. More specifically, this study addresses the following questions:

1. How frequently does editing occur in tutorials for all students, and does this frequency differ in statistically significant ways when broken down by the above-mentioned user groups, tutorial modes, and time of student visits?
2. How much time, and what percentage of time, is spent on editing within tutorials for all students, and does the amount of time differ in statistically significant ways when broken down by the above-mentioned user groups, tutoring modes, and time of student visits?

The third aim of this study is to provide other institutions with a model for studying and understanding more clearly what takes place in their writing center tutorials. Ultimately, understanding the answers to the questions above may help writing center administrators to consider their positions on the role editing should, or should not, play in tutorials, as well as how they train tutors and, in turn, market their services to local constituencies.

The Study

Data Collection. To answer my questions about what editing looked like in the writing center I direct, I developed a longitudinal study conducted over four academic years, from 2017 to 2020, that examined data from tutor reports filed in our WCOnline database

from 4,072 writing center tutorials. I mined several kinds of data from these reports. The first of these addressed the types of writing tasks that tutors self-reported having addressed in tutorials. Tutors identified these tasks, which are commonly found on tutoring report forms, from the following pulldown menu in their reports:

- "Understanding the assignment/format"
- "Establishing a purpose"
- "Developing or clarifying a thesis"
- "Establishing a proper focus,"
- "Developing ideas"
- "Organizing ideas"
- "Documenting/researching"
- "Editing ideas and language"
- "Editing mechanics."

I sorted tutorials that addressed "Editing ideas and language" or "Editing mechanics," or both, or neither, to identify how frequently editing occurred in all tutorials and how that frequency might have changed according to user groups, tutorial mode, and time of student visits relative to project due dates. Determining frequency of all writing tasks also allowed me to make comparisons between the frequency of editing and non-editing tasks by user groups. Regarding user groups, it should be noted that each writing center visitor identified their gender on

WCOnline's student registration form, selecting from male, female, transgendered male, transgendered female, and non-binary/non-conforming. Due to a low number of self-identifying transgendered and non-binary/non-conforming students, only male and female genders were analyzed in this study.

The second kind of data I obtained from tutor reports was the length of time tutors reported addressing editing issues. Tutors responded to a question asking, "How much time spent on editing words, ideas, mechanics, and punctuation?" by clicking on the five-minute increment listed in a drop-down box that most closely represented the amount of time that was devoted to editing in their tutorials: 0, 1-5, 6-10, 11-15…40-45, 45+. From these figures, mean and mode times were calculated for each user group, tutoring mode, and time of visit.

A third kind of data I unearthed from tutor reports was the length of tutorial. One-hour tutorials are the default in my writing center, but tutors report how long sessions actually lasted by selecting five-minute increments from five to sixty minutes from a drop-down box that reads "Actual Appointment Length." This information allowed me to determine both the length and percentage of time devoted to editing at each tutorial.

A fourth kind of data I gained from tutor report forms identified the length of time between the writing center visit and the due date of the tutee's writing project. Tutors would ask students to respond

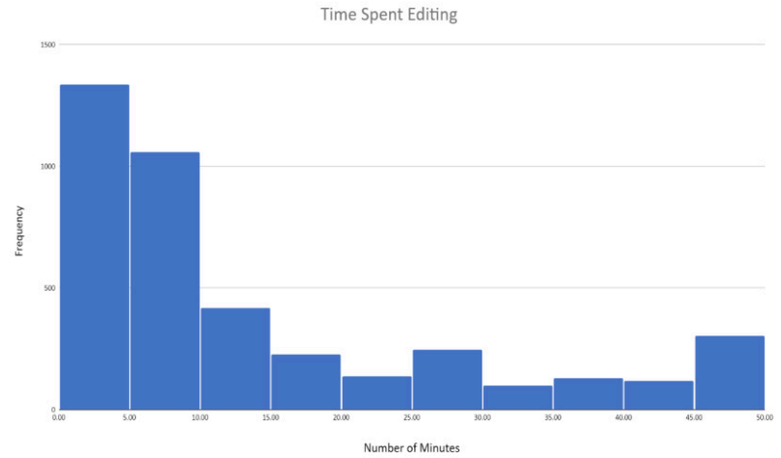
to the question "Days until paper/project due date?" and click on the best option from a drop-down box—not applicable, 1, 2, 3, 4, 5, 6, 7, More than a week. This information made it possible to determine if a relationship existed between time of visit and the frequency of and time spent on editing.

Using information found on WCOnline's student registrations and appointment forms, I could connect the above data on frequency of and time spent on editing to writing center users by gender, student status, course level, language, tutorial mode, and time of visit relative to project due date.

After collecting data, my next move was to enlist a mathematician as my co-author who could help me determine if my results concerning the frequency of and time spent on editing in tutorials were statistically significant. Because our data had a skewed distribution rather than a bell-shaped curve (see Figure 1), we used three non-parametric tests—Chi-Squared, Mann-Whitney U, and Kruskal-Wallis—to perform analyses. When considering non-numerical data points produced by queries about frequency of editing, which essentially ask a yes or no question about whether editing occurred in a tutorial or not, we used Chi-Squared tests to generate p-values that represent the probability of the data occurring randomly. The lower the p-value, the more likely that the correlation between the variables being examined is statistically significant rather than the

outcome of chance. For example, a p-value of 0.05—a common standard for determining statistical significance, means that the chance of the data happening randomly is only 5/100. We looked for p-values less than 0.05 to indicate statistical significance when comparing the frequency of editing by gender, student standing, course level, language, mode of tutorial, and time of writing center visit.

Figure 1
Histogram of Time Spent Editing



When considering numerical data points, we used either Mann-Whitney U or Kruskal-Wallis tests in our analyses. More specifically, we used Mann-Whitney U tests when comparing data points generated by queries about time spent on editing between two groups such as males and females or graduate and undergraduate students. A Mann-Whitney U test looks at the difference between two independent groups that are not normally

distributed. The null hypothesis was that the distribution of time across points of comparison of categories were the same. If the null hypothesis was rejected with a p-value of less than 0.001, a value we chose due to the high number of data points being considered, the difference in the amount of time spent editing by the groups was said to be statistically significant rather than random.

We used Kruskal-Wallis tests when comparing data points concerning time spent on editing from three or more groups, such as users of face-to-face, asynchronous, and synchronous-online modes of tutoring; visitors from course levels ranging from 100 to 500 and above; and students who visited on different numbers of days (1-7+) from their project due dates. The standard used to prove statistical significance in a Kruskal-Wallis test is a p-value of less than 0.05, but we chose a value of less than 0.001 because of the strength of our data.

In addition to presenting statistically significant results, the study also includes descriptive statistics as part of its discussion. Comparisons made between writing center users' frequency of time spent on editing and other writing tasks in tutorials are merely descriptive statistics, not statistically significant ones.

Findings and Discussion

Based on our data set, a composite profile of our writing center visitors looks like this: On average, students edited in

79% of all tutorials and spent 14.13 minutes out of an average tutorial length of 46.84 minutes doing so, roughly 30% of their total tutorial time. Students tended to edit more frequently and spent more time editing if they worked online than if they worked face to face and if their primary language was not English. Students tended to address editing more frequently and spent more time editing while conversely performing non-editing-related writing tasks less frequently as their visits approached their project due dates. The average visit occurred 3.5 days before their project due dates but most frequently took place just one day before those dates. Broadly speaking, students' involvement with editing depended chiefly on who those students were, what mode of tutoring they used, when they visited the writing center, and to a lesser extent on how long their tutorials lasted and how frequently they performed non-editing writing tasks.

The findings and discussion of the frequency of editing, time spent on editing, and related information for each user group (gender, student standing, course level, and primary language); tutoring mode (face-to-face, synchronous-online, and asynchronous), and time of visit relative to project due date will be presented separately.

Gender

Findings. A total of 4,067 tutorials were conducted by persons identifying as male or female. That total can be broken down into 1,278 tutorials by males and 2,789 tutorials by females. As Table 1 shows, a Chi-Squared test determined that a significant difference in the frequency of editing between female and male students exists. Editing occurred in 81.7% of all tutorials involving female students and 73.2% involving males.

Table 1
Statistical Significance of Difference in Frequency by Gender

Gender	Tutorials with Editing	Tutorials without Editing	Total	Frequency of Editing
Male	935	343	1278	73.2%
Female	2279	510	2789	81.7%
	3214	853		
		Pearson's Chi-Squared	3. 38.7 p<0.001	

As Table 2 shows, a Mann-Whitney U test demonstrated a significant difference in editing length between female and male students. Females spent 14.6 minutes editing out of an average tutorial length of 47.52 minutes, which is just greater than 30% of their time. By contrast, males spent 13.0 minutes editing out of an average length tutorial of 45.12 minutes, just under 29% of their time.

Table 2
Statistical Significance of Difference in Time Spent Editing by Gender

Gender	N	Mean	Standard Deviation
Male	1278	13.0 minutes	14.4 minutes
Female	2789	14.6 minutes	4.5 minutes
		Mann-Whitney U Test Statistic	1626804.0 p<0.001

We also found other differences in the way males and females participated in writing center tutorials. Females visited the writing center more days before their project due dates than did males - 3.72 days to 3.15 days, respectively—though for both groups the mode visit—the most frequently visited day—was one day before the project due date. Females also used online modes of tutoring more frequently than did males, 35% to 26%, respectively. Females performed all non-editing-related writing tasks identified on tutor reports less frequently than their male counterparts.

Discussion. A breakdown of our data by gender shows a statistically significant difference between the frequency and length of time spent editing by females and males. In both cases, females edited more frequently and longer than males. In turn, females chose online modes of tutoring more frequently than males and visited the writing center further from their project due dates. Females also spent more time in those tutorials and performed non-editing writing tasks less frequently than males.

Ultimately, female students chose to focus more on editing than did males during writing center visits. Some explanations for this could be connected to (1) the editing practices associated with particular subgroups that comprised the female group and (2) how females, in general, made use of their writing center visits.

One reason for females' high participation in editing may have been because, in comparison to males, the female group contained a greater percentage of graduate students (29%-18%) and English as an Additional Language (EAL) students (27%-24%). As I will show in the next section, these visitor groups tended to edit more frequently and spend more time editing in their tutorials than did undergraduate students and students whose primary language was English.

Another reason for females' greater participation in editing has to do with their choices of tutoring mode. While both females and males predominantly worked face to face with tutors, females worked online 9% more frequently than males. As will be shown in the section on tutoring modes, online tutoring generally was associated with higher rates of frequency and time spent on editing than was face-to-face tutoring.

The length of their tutorials could be another reason why female students edited more frequently and spent more time editing than males. In short, females had more time to edit than

males and took the opportunity to do so. That female students' tutorials on average lasted 2.4 minutes longer than males' could alone account for the resulting 2.12-minute difference in their respective editing times and the greater frequency of performing editing tasks in general.

Females' choices to work on non-editing writing tasks less frequently than males could be yet another factor that gave them more opportunity to focus on editing tasks. Admittedly, correlating a cause-and-effect relationship between frequency of performance of non-editing writing tasks and time spent on editing is problematic because our study did not measure the length of time students devoted to non-editing writing tasks. As a result, it is difficult to know if females spent considerable amounts of time on the fewer non-editing tasks they performed, or if they spent more time than males on editing because of having fewer other tasks to address. Whichever the case, it isn't a stretch to hypothesize that females were not only more likely to edit but also to spend more time editing in their tutorials because they may have had more opportunity to do so.

Finally, the timing of females' visits to the writing center relative to their project due dates likely didn't have much of an influence on editing, but it stands as a telling detail, nonetheless. On average, females visited the writing center farther from their project due dates than did males. As will be shown in another section of the

findings, frequency of and time spent on editing generally increases as the days until project due dates decrease, but that relationship did not hold up when comparing tutorials by gender. Females edited more than males, even though their time of visit averaged more than half a day farther from their project due dates. What is interesting about this fact is that, in conjunction with females' other habits of working online for longer and with fewer other tasks in tutorials, females' decisions to edit appear more deliberate than situational.

Student Standing

Findings. Using a Chi-Squared test, we found a statistically significant difference between the frequency of editing by graduate and undergraduate students, as can be seen in Table 3. Graduate students edited in 88.30% of all tutorials, while undergraduates did so in 75.27% of theirs.

Table 3
Statistical Significance of Difference in Frequency by Student Standing

Standing	Tutorials with Editing	Tutorials without Editing	Total	Frequency of Editing
Graduate	913	121	1034	88.30%
Undergraduate	2192	720	2912	75.27%
	3105	841	3946	
		Pearson's Chi-Squared	77.2 p<0.001	

Using a Mann-Whitney U test, we found a statistically significant difference between the length of time spent editing by graduate and undergraduate students. As can be seen in Table 4,

graduate students spent an average of 16.5 minutes out of an average tutorial length of 51.87 minutes addressing editing issues, which was 31.81% of the total tutorial time. By comparison, undergraduates spent an average time of 13.3 minutes out of an average tutorial length of 46.63 minutes addressing editing issues, 28.52% of the total tutorial time.

Table 4
Statistical Significance of Difference in Time Spent Editing by Student Standing

Gender	N	Mean	Standard Deviation
Graduate	1034	16.5 minutes	14.8 minutes
Undergraduate	2908	13.3 minutes	13.7 minutes
		Mann-Whitney U Test Statistic	1223276.5 p=0.000

We also found Graduate students, on average, visited the writing center slightly further away from their project due dates than did undergraduates (3.55 days to 3.51 days, respectively), though for both groups, the mode visit—the most frequently visited day- was one day before the project due date. Graduate students also used online modes of tutoring in 51% of their tutorials, while undergraduates did so in only 26% of theirs.

Graduate students performed all non-editing-related tasks with the exception of "understanding the assignment/format" less frequently than undergraduates.

Discussion. Data broken down by student standing shows a statistically significant difference between the frequency of editing by graduate and undergraduate students, with graduate students editing more frequently and longer in tutorials than undergraduates. On average, graduate and undergraduate students visited the writing center around 3.5 days prior to their project due dates, but graduate students chose online modes more frequently. Graduate students also spent more time in those tutorials than did undergraduates but worked less frequently on all non-editing writing tasks other than "understanding assignment/format."

During writing center visits, graduate students focused on editing more than undergraduates did and likely did so for three reasons: (1) their attitudes toward writing; (2) the editing practices associated with the subgroups that comprised the graduate student group; and (3) their general use of writing center visits.

Graduate students likely felt greater pressure to produce more professional-looking documents than did undergraduates. Whether this pressure was self-generated or a reaction to rigorous standards set by graduate faculty, it likely led graduate students to address matters of correctness 13% more frequently and 3% longer than did undergraduates.

Another potential cause of graduate students' higher frequency and length of time editing could be attributed to the makeup of the graduate student group. Females and EAL students are associated with higher rates of editing. Our study shows that graduate students were comprised of a higher percentage population of females and EAL students than were undergraduates: Females comprised 78% of graduates compared to 65% of undergraduates, and EAL students comprised 50% of graduate students compared to 17% of undergraduates.

The time of visit probably did not play much of a factor in the differences in frequency or length of time of editing between graduates and undergraduates. On average, the two groups visited the writing center roughly the same number of days before their project due dates, 3.55 and 3.52, respectively. However, graduate students' greater participation in editing may be related to their choices of tutoring mode. Graduate students used online modes of tutoring in 51% of their tutorials compared to undergraduates who used online modes in only 26% of theirs.

The comparative length of tutorials by the two groups as well as the percentage of time devoted to non-editing writing tasks may also have contributed to the differences in the two groups' focus on editing. On average, tutorials with graduate students lasted 7.2 minutes longer than those with undergraduates, a length which more than covered the extra 3.9 minutes graduates spent on editing

over undergraduates. Coupling this with the fact that graduate students also worked less frequently on all non-editing writing tasks except for "understanding assignment/format," it is likely that graduate students had more opportunity for editing during their tutorials. This would have been especially probable for graduate students who felt they needed less help with global issues in their writing than did undergraduates or for those who found tutors to be less equipped to address non-editing writing tasks because of the complexity of their subject matter or specialized nature of their assignments.

Course Level

Findings. Data showed a statistically significant difference between the frequency of editing by students from different course levels. With an exception at the 200-level, we found that, as course levels rose, so did the frequency of editing: 74.30% for 100-level visitors, 63.88% for 200-level visitors, 75.12% for 300-level visitors, 84.56% for 400-level visitors, and 89.88% for 500-level and above visitors. Table 5 presents a Chi-Squared test showing the difference in frequency of editing by course level to be statistically significant.

Table 5
Statistical Significance of Difference in Frequency by Course Level

Course Level	Tutorials with Editing	Tutorials without Editing	Total	Frequency of Editing
100	714	247	961	74.30%
200	214	121	335	63.88%
300	939	311	1250	75.12%
400	252	46	298	84.56%
Graduate	924	104	1028	89.88%
	829	3043	3872	
		Pearson's Chi-Squared	146.785 p<0.001	

We also determined through the use of a second Chi-Squared test if significant differences in frequency existed between each course level and found significant differences between all levels with the exception of between 100- versus 300-level visitors (see Table 6).

Table 6
Pairwise Comparison of Difference in Frequency by Course Level

Comparison	Chi-Squared	P-value
100 versus 200	13.258	<0.001
100 versus 300		Not significant
100 versus 400	13.426	p<0.001
100 versus graduate	83.020	p<0.001
200 versus 300	16.833	p<0.001
200 versus 400	34.737	p<0.001
200 versus graduate	123.950	p<0.001
300 versus 400	12.095	p<0.001
300 versus graduate	82.520	p<0.001
400 versus graduate	6.516	p=0.011

Data also showed a statistically significant difference between the length of time spent editing by students from different course levels. We also compared the length of editing time by student course level, finding that as undergraduate course levels rose, so did the length of time students in those courses spent editing. In fact, the length more than doubled from 100-level to 400-level visitors: 10.4 minutes for 100-level visitors, 11.5 minutes for 200-level visitors, 12.1 minutes for 300-level visitors, and 20.9 minutes for 400-level visitors. At 17.1 minutes, 500-level and above visitors spent more time editing than students from all other course levels except 400-level. We used a Kruskal-Wallis test to determine that there was a significant difference in the distributions of course level (see Table 7).

Table 7
Statistical Significance of Difference in Time Spent Editing by Course Level

Course Level	N	Mean	Standard Deviation
100	960	10.4 minutes	12.3 minutes
200	335	11.5 minutes	13.7 minutes
300	1250	12.1 minutes	13.7 minutes
400	298	20.9 minutes	16.5 minutes
Graduate	1026	17.1 minutes	14.8 minutes
		Kruskal-Wallis Test Statistic	236.9 p<0.001

Table 8 presents a Kruskal-Wallis test that shows the areas of significant difference between the minutes spent editing at each

course level, the largest being between 100- and 400-level courses and 200- and 400-level courses.

Table 8
Pairwise Comparison of Difference in Time Spent Editing by Course Level

Level Comparison	Test Statistic	P-value
100 versus 300	-202.207	p<0.001
100 versus graduate	-600.095	p=0.000
100 versus 400	-790.675	p=0.000
200 versus graduate	-572.574	p=0.000
200 versus 400	-763.154	p=0.000
300 versus 400	-588.468	p=0.000
300 versus graduate	-397.888	p=0.000

The percentage of time devoted to editing in a tutorial also increased by course level for undergraduates, and, again, graduate students spent a greater percentage of time than students from all other levels except 400-level courses: 25.8% for 100-level; 27.3% for 200-level; 28.9% for 300-level; 37.9% for 400-level; and 35.9% for 500-level and above.

For undergraduates, as their course levels rose, so did the average number of days between their project due dates and visits to the writing center: 3.03 days for 100-level; 3.05 days for 200-level; 3.39 days for 300-level; and 3.99 days for 400-level. Graduate students, on average, visited the writing center 3.52 days away from their project due dates, furthest of all students, except 400-level

courses. The mode of student visits for each course level, that is, the day most frequently visited by students, was one day before their project due dates.

As course levels rose for undergraduates, so did the frequency of their choosing to use online modes of tutoring: 12% for 100-level; 19% for 200-level; 35% for 300-level; and 52% for 400-level. Students from courses 500-level and above had the second highest frequency of online tutorials at 51%.

As course level rose for undergraduates, so did the length of their tutorials: 40.32 minutes for 100-level; 42.49 minutes for 200-level; 44.69 minutes for 300-level; and 55.6 minutes for 400-level. Students from courses 500-level and above had the second longest average tutorial length of 47.62 minutes.

No clear difference in pattern of frequency of performance of all non-editing-related tasks could be discerned between visitors from different course levels.

Discussion. While our data collection techniques did not facilitate comparisons of frequency of and time spent editing by student year, they did allow for comparisons by the levels of courses students were visiting from. The statistics, on average, show a significant difference between the frequency of and time spent on editing by students visiting from different course levels. In general, as the course levels of writing center visitors rose, so did students' frequency of and time spent on editing. As course

levels rose, tutorials took place further away from their project due dates, except for graduate student visits, which took place closer to due dates than did visits for 400-level courses. The choice of using online modes increased with students' course level. The length of tutorials increased with undergraduate course level, and student tutorials for those in 500-level and above courses were longer than all course levels other than 400-level. No discernable pattern of frequency of performance of non-editing-related tasks could be established by course level.

Several factors might have contributed to students' greater focus on editing in tutorials as the levels of the courses for which they visited the writing center rose. One factor was the makeup of visitors in each course level. Generally, as course levels rose, so did the percentage of female and EAL students, making editing an increasing priority for the group as a whole. Moreover, as their course levels rose, all students likely faced increasing pressure to produce more professional-looking documents. That pressure may have caused 500-level and above visitors to edit 21% more frequently than 100-level visitors and 400-level visitors to edit 14% more frequently than 100-level visitors. Similarly, it may have caused 500-level and above visitors to edit 64% longer than 100-level visitors and 400-level visitors to edit 100% longer.

Proximity to project due dates does not seem to have been a factor affecting the frequency of and time spent on editing. In all

tutorials, we found that the closer students visited the writing center relative to their project due dates, the more likely they were to edit and spend more time editing. The inverse of this relationship appears true when analyzing student course levels. As course levels rose, so did the number of days before the project due date, yet rather than finding an associated decrease in frequency and time spent on editing, we found the opposite to be true.

Two factors that likely did influence students' editing was their choice of tutoring mode and the length they participated in tutorials. Students' choice of online modes of tutoring increased a dramatic 40% from 100- to 400-level courses and 39% to 500-level courses and above. Similarly, the length of tutorials increased 38% from 100-level (40.32 minutes) to 400-level tutorials (55.6 minutes) and 18% from 100-level to 500-level tutorials and above (47.62 minutes). These sizeable increases could account for upturns in both frequency of and time spent on editing by students in higher level courses.

No clear difference in the pattern of frequency of performance of all non-editing-related tasks could be discerned between visitors from different course levels and was likely not a factor affecting the frequency of and time spent on editing by students in higher level courses**.** This lack of pattern also problematizes the notion that upper-level students' greater focus on editing

corresponds with less need for help with non-editing writing tasks because they are typically more skilled as writers than students from lower-level courses.

Language

Findings. Using a Chi-Squared test and Mann-Whitney U test, respectively, we found a statistically significant difference between the frequency of editing by EAL students and EFL students and between the length of time spent editing by those two groups, as can be seen in Tables 9 and 10.

Table 9
Statistical Significance of Difference in Frequency by First Language Use

Language	Tutorials with Editing	Tutorials without Editing	Total	Frequency of Editing
English	2267	761	3028	74.87%
Other	949	93	1042	91.07%
	3216	854		
		Pearson's Chi-Squared	122.8	
			p<0.001	

EAL students edited in 91.07% of their tutorials, while EFL students edited in 74.87% of theirs.

EAL students spent nearly six more minutes editing in tutorials than did EFL students, taking 18.4 minutes and 36.33% of their tutorials to edit compared to 12.6 minutes and 27.67% of their tutorials for EFL students.

Table 10
Statistical Significance of Difference in Time Spent Editing by Language

Native Language	N	Mean	Standard Deviation
English	3026	12.6 minutes	13.8 minutes
Other	1042	18.4 minutes	15.5 minutes
		Mann-Whitney U Test Statistic	1169948.0 p=0.000

EAL students, on average, visited the writing center closer to their project due dates than did EFL, 2.99 days to 3.66 days, respectively, though the mode time of visit for both groups was one day before the project due date. EAL students chose online modes of tutoring in 39% of tutorials, while EFL students did so in 30%. EAL students spent, on average, 50.66 minutes in tutorials compared to 45.53 minutes by EFL students. EAL students performed all non-editing-related tasks less frequently than did EFL students.

Discussion. Data broken down by student standing shows a statistically significant difference between the frequency of editing and length of time spent editing by EAL students and English as First Language (EFL) students. EAL students edited more frequently and longer in tutorials than did EFL students. On average, EAL students also visited the writing center closer to their project due dates than did EFL students and chose online modes more frequently. In addition, EAL students spent more time in those tutorials but worked less frequently on all non-

editing writing tasks than did EFL students.

One likely reason EAL students edited more frequently and for longer periods of time than EFL students had to do with their group makeup, which was comprised of a higher percentage of female and graduate students, two segments of the population associated with a high frequency of and time spent on editing. The difference might also reflect that EAL students likely faced greater pressure from themselves and their professors to produce "correct" documents than did EFL students. Moreover, as Powers (1993) has noted, EAL students' comparative lack of familiarity with English grammar, mechanics, and idiomatic expressions often places a greater demand on tutors to play the role of linguistic informants (p. 41), which can, as it did in our study, result in editing becoming a greater focus in tutorials.

Another factor possibly influencing EAL students' greater frequency of and time spent on editing correlates with their average time of visit to the writing center, which, at 2.99 days before the project due date, came more than half a day after EFL students' visit of 3.66 days. As our study has found, as students generally get closer to the project due date, they tend to edit more frequently and spend more time on editing in their tutorials, as was the case with EAL students.

EAL students' greater frequency of using online modes may have also contributed to their greater focus on editing, not only

because those modes are generally associated with a higher frequency of and time spent on editing than in face-to-face tutoring, but because online tutorials are generally longer. As our study showed, EAL students' tutorials lasted, on average, five minutes longer than EFL student visits, a span that could nearly have made up the six-minute difference in time spent editing between the two. With the extra five minutes, EAL students had the opportunity to edit more, and more frequently, especially given their choice to work less frequently on non-editing writing tasks.

Tutoring Mode

Findings. Using a Chi-Squared test, we found a statistically significant difference among the frequencies of editing of face-to-face, asynchronous, and synchronous online tutorials. As Table 11 shows, editing frequency was 71.44% in face-to-face tutorials, 93.16% in asynchronous tutorials, and 96.71% in synchronous-online tutorials.

Table 11
Statistical Significance of Difference in Frequency by Tutoring Mode

Mode	Tutorials with Editing	Tutorials without Editing	Total	Frequency of Editing
Face-to-face	1971	788	2759	71.44%
Asynchronous	627	46	673	93.16%
Synchronous-online	618	21	639	96.71%
	3216	855		
		Pearson's Chi-Squared	297.3 p<0.001	

Tables 12-14 present the results of Chi-Squared tests showing significant differences in the frequencies of editing when directly comparing each mode of tutorial to one another.

Table 12
Statistical Significance of Difference in Frequency by Face-to-Face and Asynchronous *Tutoring Modes*

Mode	Tutorials with Editing	Tutorials without Editing	Total
Face-to-Face	1971	788	2759
Asynchronous	627	46	673
		Pearson's Chi-Squared	138.8 p<0.001

Table 13
Statistical Significance of Difference in Frequency by Face-to-Face and Synchronous-Online Tutoring Modes

Mode	Tutorials with Editing	Tutorials without Editing	Total
Face-to-Face	1971	788	2759
Synchronous-online	618	21	639
		Pearson's Chi-Squared	182.7 p<0.001

Table 14
Statistical Significance of Difference in Frequency by Synchronous-Online and Asynchronous *Tutoring Modes*

Mode	Tutorials with Editing	Tutorials without Editing	Total
Synchronous-Online	618	21	639
Asynchronous	627	46	673
		Pearson's Chi-Squared	8.518 p=0.004

We also used Kruskal-Wallis tests to look at the difference between multiple independent groups that are not normally distributed in order and found a statistically significant difference between the length of time spent editing by students using face-to-face and online modes of tutoring. Table 15 shows that a significant difference in the length of time spent editing for the three modes exists. The mean time for editing in face-to-face tutorials was 13.8 minutes compared to 14.76 minutes for all online tutorials -15.5 minutes for asynchronous tutorials and 13.9 minutes for synchronous online tutorials.

Table 15

Statistical Significance of Difference in Time Spent Editing by Tutoring Mode

Mode	N	Mean	Standard Deviation
Face-to-face	2759	13.8 minutes	15.4 minutes
Asynchronous	673	15.5 minutes	12.9 minutes
Online	638	13.9 minutes	11.7 minutes
		Kruskal-Wallis Test Statistic	85.981 p<0.001

In addition to determining if a difference in distribution exists between the modes in general, we also compared time spent on editing from each mode using a Kruskal-Wallis test and found face-to-face tutorials differed significantly from the two online

modes, asynchronous and synchronous, but that the two online modes, didn't differ significantly from each other (see Table 16).

Table 16

Pairwise Comparison of Difference Between Tutorial Modes

Mode Comparison	Test Statistic	P-value
Face-to-face versus Synchronous-online	-327.2	<0.001
Face-to-face versus Asynchronous	387.8	<0.001
Online versus Asynchronous	60.5	0.344

We also collected descriptive statistics related to tutorial mode. Face-to-face students on average visited further from their project due dates than did online students, 3.58 days to 3.20 days, respectively. Of online students, asynchronous students visited further from their project due dates than did synchronous online students, 3.76 days to 2.86 days, respectively.

The average length of online students' tutorials was 51.49 minutes - asynchronous 54.98 minutes, synchronous online 47.82 minutes - compared to 44.64 minutes for face-to-face students. Face-to-face students spent a greater percentage of their total tutorial time editing (30.91%) than did synchronous online students (29.19%) or asynchronous students (28.21%).

Face-to-face students performed all non-editing-related writing tasks—with the exception of "documentation/research"—more frequently than did asynchronous and synchronous online students.

Discussion. Face-to-face students edit less frequently and spend less time editing than online students. When we considered correlations between the mode of tutoring and the frequency of and time spent on editing, the data showed a statistically significant difference between the frequency of editing by students using face-to-face, asynchronous, and synchronous online modes of tutoring. The data also showed a statistically significant difference between the length of time spent editing by students using face-to-face tutoring and students using online modes but not between students using editing and synchronous online modes. We also found that online students visited the writing center closer to their project due dates, held longer tutorials, and attended to non-editing writing tasks less frequently than did face-to-face students.

Several factors may have influenced online students to focus more on editing during writing center visits than face-to-face students did. The first of these was group composition. In comparison with face-to-face students, online students were comprised of a greater percentage of students from three groups of the writing center population associated with higher frequency and more time spent on editing: females (74%-65%); graduate students (40%-19%); and EAL students (3%-2%).

A second factor was the time of students' writing center visits. Online student visits to the writing center occurred closer, on

average, to project due dates than did face-to-face student visits, and this proximity, generally associated with a greater frequency of and time spent on editing, followed expectations. (If we break online visits into asynchronous and synchronous online, the picture is not quite so neat. Only synchronous online tutorials occurred closer to project due dates than face-to-face tutorials; however, both synchronous and asynchronous tutorials resulted, respectively, in 25% and 22% greater editing frequency, and 0.1 and 1.7 minutes longer editing time than took place in face-to-face tutorials.)

A third factor contributing to a higher rate and length of editing in online tutorials was the length of tutorials. The average length of online tutorials (51.49 minutes)— asynchronous 54.98 minutes and synchronous online 47.82 minutes—was nearly seven minutes longer than face-to-face tutorials (44.64 minutes), which provided online students with a greater opportunity to edit more frequently and longer. Arguably, online tutorials take longer than face-to-face tutorials because the technology required can be slow, inefficient, or unfamiliar to users. Tutors faced with having to sort through occasional technical glitches, wrestle with awkward screen shifts and scrolling to locate passages, and type responses to student writing might also be more inclined to carry out line editing than discussing non-editing matters. Online students' decisions to work less frequently on all non-editing writing tasks, with the exception of "documentation/research," seem to support this possibility.

Days Until Project Due Date

Findings. Days until the project due date was also considered for frequency of editing. The frequency of editing by visitors from days 1-7+ were compared and using a Chi-Squared test found statistically significant (see Table 17). We found that the frequency of editing was considerably higher within two days of the project due date than at other times, but otherwise no clear pattern in frequency could be discerned: one day: 82.35%; two days: 75%; three days: 63.80%; four days: 58.87; five days: 64%; six days: 65.43%; seven days: 58.33%; 7+ days: 58.42%.

Table 17
Statistical Significance of Difference in Frequency by Days to Project Due Date

Days until due date	Tutorials with Editing	Tutorials without Editing	Total	Frequency of Editing
1	658	141	799	82.35%
2	213	71	284	75.00%
3	104	59	163	63.80%
4	83	58	141	58.87%
5	80	45	125	64.00%
6	53	28	81	65.43%
7	56	40	96	58.33%
More than 7	229	163	392	58.42%
	1476	163		
		Pearson's Chi-Squared	108.053 p<0.001	

Days until the project's due date were also considered for the length of time editing. We used a Kruskal-Wallis test to determine that significant differences in time spent on editing existed between days 1-7+ of student visits (see Table 18), but no

meaningful pattern of time spent editing emerged other than to say that two of the three highest mean times spent on editing occurred one and two days before the project due date: one day: 13.42 minutes; two days: 12.79 minutes; three days: 10.48 minutes; four days: 13.82 minutes; five days: 10.75 minutes; six days: 10.72 minutes; seven days: 10.34 minutes; 7+ days: 12.69 minutes.

Table 18
Statistical Significance of Difference in Time Spent Editing by Days until Due Date

Days	N	Mean	Standard Deviation
1	799	13.42 minutes	13.9 minutes
2	284	12.79 minutes	13.6 minutes
3	163	10.48 minutes	12.6 minutes
4	141	13.82 minutes	16.2 minutes
5	125	10.75 minutes	13.3 minutes
6	81	10.72 minutes	13.8 minutes
7	96	10.34 minutes	14.6 minutes
7+ days	392	12.69 minutes	15.5 minutes
		Kruskal-Wallis Test Statistic	29.029 p<0.001

Hoping a more coherent picture might emerge, we compared days 1-3 to 5-7 visits instead, and using a Chi-Squared test, we found significant differences in the frequency of editing, with editing occurring more frequently during 1-3 visits (78.25%) than in day 5-7 visits (62.58%) (see Table 19).

Table 19
Comparison of Close to Deadline versus Further from Deadline in Frequency of Editing by Days to Due Date

Days to Until Date	Tutorials with Editing	Tutorials without Editing	Total	Frequency of Editing
Days 1-3	975	271	1246	78.25%
Days 5-7	189	113	302	62.58%
		Pearson's Chi-Squared	31.99 p<0.001	

We also found significant differences in length of editing between the two groups, with days 1-3 lasting 12.89 minutes (31% of total tutorial) compared to 10.61 minutes for Days 4-7 (24% of total tutorial) (see Table 20).

Table 20
Statistical Significance of Difference in Time Spent Editing by Close to Deadline versus Further from Deadline

Days to Due	N	Mean	Standard Deviation
1-3 Days	1246	12.8 minutes	13.6 minutes
4-7 Days	302	10.6 minutes	13.8 minutes
		Mann Whitney U Test	158274 p<0.001

Moreover, we found that day 1-3 tutorials lasted longer than day 4-7 tutorials, 47 minutes to 42 minutes, respectively, and that Day 1-3 visitors addressed all non-editing-related writing tasks less frequently than did day 5-7 visitors.

Discussion. Our initial attempt to determine if the frequency and length of editing changed according to the number of days between student visits and their project due dates yielded problematic results. While we found significant differences in

frequency of, and the time spent on, editing for days 1-7+, only irregular patterns of difference emerged from the comparison. As a result, we revised our study to compare differences in editing for day 1-3 and 5-7 visitors, and this produced more useful results. The frequency of editing and time spent editing rise as student visits approach project due dates. We found a significant difference in the frequency of editing in the two groups, with editing occurring more frequently for day 1-3 visitors (78.25%) than for day 5-7 visitors (62.58%). In turn, we found that the average length of time spent on editing for day 1-3 visitors was 12.89 minutes compared to 10.61 minutes for day 5-7 visitors. Finally, we found that day 1-3 visitors chose online modes more frequently, 16% to 13%, respectively; held shorter tutorials; and attended less frequently to all non-editing writing tasks than did day 5-7 visitors.

Several factors may have influenced choices that led day 1-3 visitors to focus on editing more than day 5-7 visitors. One of these has to do with the makeup of the day 1-3 group. Although they were comprised of a lower percentage of females, day 1-3 visitors were composed of a higher percentage of graduate and EAL students, two segments of the writing center population associated with higher frequency and more time spent on editing. Secondly, day 1-3 visitors' tutorial habits likely played a factor in editing. Day 1-3 visitors worked online more frequently, had longer tutorials, and performed all non-editing-related writing tasks less frequently

than did students visiting days 5-7, all of which served to encourage the performance of editing over non-editing writing tasks.

These findings suggest that students became more correction-focused the closer their writing center visits approached their project due dates. That 20% of all writing center visits occur just one day before student project due dates underscores the reality that students often see value in the writing center as a last-minute stop for editing. This probably comes as little surprise to writing center tutors and administrators.

Influences and Limitations of Study

Several institutional factors likely influenced the results of this study. First, the data used in this study is self-reported and based on the memory of tutors concerning what took place in tutorials. Tutors needed to remember not only what took place in tutorials, but, in the case of editing, to estimate how much time was devoted to it, something that isn't always easy to do accurately.

Secondly, the results may have been affected by tutor training. Tutors were taught to prioritize addressing higher-order concerns over surface-level issues, which might have influenced not only which kinds of writing tasks they sought to address in tutorials, but also how accurately they identified editing tasks and the time devoted to them. Given they were sometimes writing tutor reports for the person who had trained them, tutors

might have downplayed the amount of editing that went on to appear to follow our writing center agenda.

A third factor, student writing biases and tutoring experience might have influenced tutor conversations with students and what they remembered about them, which in turn might have affected the outcomes data used in the study. Tutors were not equally comfortable with following training that urged them to prioritize global concerns over sentence-level correction.

Finally, results may have been affected by tutor confusion over distinguishing the difference in meaning between the phrases "editing ideas and language" and "developing ideas" found on WCOnline tutor reports. Despite efforts to make this distinction clear to tutors in tutor training, some confusion between the two may have occurred.

Another limitation of this study had to do with the data collected on how the frequency of editing and time spent editing varied according to the time of student visits relative to project due dates. We found the data set was much smaller for this inquiry than other of the study's inquiries. Only 51% of tutor reports indicated a time before the project's due date. As a result, 49% were marked "not applicable," which meant some tutorials may have been conversation tutorials rather than writing tutorials, student writing projects didn't have clear due dates, students didn't know their due dates, or tutors forgot to ask for the due dates and checked off "not

applicable" as a result. In future studies in this area, researchers might need to draw from a larger data set to get a more complete view of student behavior.

Future studies may also wish to look to see if frequency and time spent editing changes for students with multiple writing center visits for the same assignment. This study attempted to make possible the collection of this kind of data, but in the end, failed in the attempt. Tutor reports were designed so that we could trace individual student visits from a particular course by date and by a brief description of writing assignments, but these descriptions often lacked clarity, which made it impossible to distinguish when students were visiting for the same assignment or not.

Conclusion

From 2017 to 2020, over the course of 4,072 tutorials conducted at my writing center, editing was the most frequently performed writing task in tutorials, occurring in 79% of all tutorials, commanding roughly 30% of total tutorial time. While those figures were higher than expected, they are understandable. Because the majority of comments students receive on their papers from their instructors address editing issues and because members of the college community—professors, administrators, and even college tour guides—often emphasize the writing center as a place where students can go to

get their papers fixed, editing becomes a student focus in tutorials.

Our figures on the frequency of and time spent on editing can be compared to those found in previous studies. When compared, figures from our current study on the frequency of editing are found to be higher than those from two previous studies, where the frequency of editing was broken down into the frequency of "editing ideas/language" and "editing mechanics." In a 2009 study of over 3,200 tutorials, tutors reported that "editing mechanics" occurred in 49.4% of all tutorials, while "editing ideas/language" took place in 38.2% of those tutorials (Enders, 2009, p. 10). In another study of 2,390 non-EAL tutorials in 2013, tutors reported working on editing mechanics in 53% of tutorials and editing ideas/language in 57% (Enders, 2013, p. 7). If we break down the frequency of editing of the current study into these two categories, we find that "editing ideas" took place in 65.9% of all tutorials while "editing mechanics" occurred in 67.9%. Despite the difference in their reported frequencies, each of these studies determined that editing was the most frequently performed writing task in tutorials.

Looking at the amount of time devoted to editing in tutorials, the finding of our current study, which shows that editing took up 30% of the total time of tutorials, falls somewhere in between those of two previous studies, a 2004 study of 626 tutors who reported spending 40.1% of their tutorial time on what we have described here as editing (Gaskins, 2004, p. 13) and a 2007 study of 296 tutors

from writing centers around the world in which 50% of those tutors reported they spent between 26 and 34% of their time editing and another 50% roughly between seven and 17% (Schendel, 2007, p. 2).

Despite what our study reveals about editing's significant role in our tutorials, we also understand from it that editing is not the only writing task performed. Nearly 99.3% of all tutorials addressed non-editing issues like idea development, thesis statements, documentation, focus, purpose, organization, and understanding assignments. Moreover, students spent nearly 70% of their tutorial time working on those issues. In the end, it is clear from this study that our writing center is not simply an editing house.

As stated at the outset, the goal of this paper has not been to take a position in the debate over editing's place in writing tutorials; instead, it is to present my writing center's findings on the role editing actually played in tutorials over a four-year period, explain the forces shaping that role to the extent that we could, and to present a model for other institutions to investigate and consider what's occurring in tutorials at their centers.

For me, as a writing center director, the results of the study have been useful and sometimes eye-opening. Whereas, in the past, I had a general sense of how often editing was occurring, now I understand more clearly how the frequency of, and time

devoted to, editing in tutorials correlates with various users, the tutoring platforms they use, and when in their writing process they visit the center. Admittedly, the findings made me a little uncomfortable—too much editing was going on for my liking, but the study helped me see some key reasons why it was happening. Given that students, on average, visited within three days of their assignment due dates and that 20% of all tutorials occurred one day before those due dates, a high percentage of students were using our services late in the writing process at a time typically associated with editing**.** Contributing to this problem was a rise in student demand for online tutorials, which typically occur closer to project due dates than do face-to-face visits and, subsequently, have higher incidences of editing.

Ultimately, the study's findings raise the question of how to help our various users make the best use of the writing center, whether that includes seeking help with editing or not. The answer to this question has implications on several levels. Within our writing center, members of our staff need to talk about the role that editing plays in tutorials and what factors shape it, and tutors need to be trained to read and manage clients' expectations about editing as well as how and when to negotiate tutoring agendas toward or away from editing. Within the larger university community, writing center personnel need to educate students, faculty, and staff about what really occurs in writing center tutorials and why. My writing

center, like many others, needs to better manage the narrative about its services and how editing fits within this. If we seek to change how students view writing centers to change how they use them, we will have to rely heavily on marketing–creating brochures and revising webpages, making presentations at faculty and student meetings, and even providing admissions personnel with accurate material to use when describing writing center services to prospective students who visit campus. At the administrative level, it might mean getting in the ear of a provost, making decisions about expanding online instruction, and informing them about the fundamental differences between online and face-to-face tutoring.

It is our hope that this study can be used by other institutions as a starting point to investigate such important questions concerning the function and identity of writing centers and then to act on those findings toward making their centers even more effective.

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Back on Track: Measuring Academic Resilience of Students Participating in an Academic Coaching Initiative

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Abstract

The Back on Track Support Group is a four-to-six-week academic coaching initiative at Rutgers University-New Brunswick developed specifically to improve academic resilience in students who have self-identified as struggling academically. To measure outcomes after participating in the process, the Academic Resilience Scale-30 (ARS-30) was chosen to be administered to participating students at the beginning and end of the intervention. The research found that students' academic resilience, overall academic performance, and self-perceived sense of community increased following weekly participation in the Back on Track Support Group.

Keywords: academic coaching, academic resilience, learning assistance, learning centers, self-regulation, support group, ARS-30, self-efficacy, belonging, persistence, mindset, probation

Back on Track: Measuring Academic Resilience of Students Participating in an Academic Coaching Initiative

The increasing challenges in student retention and persistence have driven significant growth in learning assistance initiatives on campuses nationwide over the last two decades. One such initiative, academic coaching, has emerged over this period in response to the increasing need for student-centered, individuated support and has positively impacted college student outcomes (Kinsel & Cooke, 2018; Krimmel & Watt, 2020). Rutgers University-New Brunswick (RU-NB) instituted academic coaching in the form of a learning assistance program in 1992 and changed the title to "academic coaching" in 2002. Since then, the program has continued to iterate and expand its offerings to address students' diverse needs in an ever-changing landscape.

The Learning Centers are situated within Undergraduate Education at Rutgers University and are open to all students on the flagship New Brunswick campus. Rutgers University–New Brunswick is a public four-year R1 research institution in the state of New Jersey with over 50,000 students. In the past five years, the Learning Centers have served 43% to 54% of the undergraduate population each year through a constellation of services, including tutoring, academic coaching, in-class learning

assistance, study groups, writing tutoring, and online modules on a variety of academic success topics.

The RU-NB Academic Coaching program offers a regular, recurring series of workshops to all students. One of the standard workshops, entitled "Back on Track," is designed to help students who self-identify as having "fallen off track" investigate the causes of their unique challenges and address those causes with targeted actions. One non-traditional transfer student who attended this workshop found that experiencing the content while connecting with other students in similar circumstances was significantly motivating. Wanting to help struggling students build community in a small group setting, she submitted a proposal to program leadership. Subsequently, the Academic Coaching program worked with her to develop and launch the inaugural Back on Track Support Group, first established as a 4-week program, in the Spring of 2022.

Purpose of Study

The Back on Track Support Group is an initiative developed specifically to improve academic resilience in students who have self-identified as struggling in their courses. *Academic resilience* is defined as success in an academic context despite encountering adversities (Cassidy, 2015; Martin & Marsh, 2006). Self-efficacy and self-regulated learning are drivers of academic resilience (Cassidy, 2015; Martin & Marsh, 2006) and have significantly informed the

curriculum design. The content developed and structure of the weekly sessions in a small group setting are designed to build self-efficacy and self-regulated learning, create community, increase connection to resources, shift mindsets, and build persistence (Martin & Marsh, 2006). To measure outcomes of the process, the Academic Resilience Scale-30 (ARS-30) was chosen to be administered to participating students at the beginning and end of the intervention. The study aims to address the following research questions:

1. How does students' academic resilience, as measured by the ARS-30, change after attending the Back on Track Support Group?
2. What differences were displayed in ARS-30 factor scores from pre- to post-assessments?
3. What are perceived outcomes of students attending at least the majority of the total Back on Track Support Group weekly sessions?
4. What changes in semester GPA are shown after attending the Back on Track Support Group? What are the differences between students' semester GPAs of a matched sample of students compared to the required probation subgroup?

Literature Review

Decades of work to delineate and support student engagement, self-efficacy, and self-regulated learning have formed a foundation on which academic coaching has been built. Structural elements such as mindset, stereotype threat, psychological resilience, and the life coaching movement have contributed to the academic coaching framework of this initiative and its goal of academic resilience.

Academic Coaching

Academic coaching is a relatively new initiative in higher education, derived in part from research showing the value of student engagement. The more engaged students are, both academically and socially, the more likely they are to persist in college (Tinto, 1998). Engagement predicts persistence and academic success, and for this reason, increased engagement drives staying in school and graduating (Han et al., 2017; Kuh et al., 2008). The more students hold a growth mindset and feel a sense of belonging, the better they feel about their coursework and the more motivated they are to commit to it, leading to higher performance and more reliable completion (Barclay et al., 2018). One of the most significant factors in whether students feel engaged and have a sense of belonging is their connection to college personnel. Academic coaching evolved in part out of a need to increase this student-personnel connection in the service of improving retention (Kinsel & Cooke, 2018; Krimmel & Watt, 2020).

The haphazard development of the academic coaching movement has made a concrete definition elusive. Part of the reason for this is the relative youth of the movement, having emerged in the last thirty years. Academic coaching derived in part from the foundation of the life coaching movement but is a unique process that can be defined as a "method of facilitating a structured conversation that helps students set, make progress on, and achieve their unique academic goals" (Howlett & Rademacher, 2023, p.1). Key elements of academic coaching such as open-ended questioning, agency, equal power, and a holistic approach are found in most coaching frameworks, one of which identifies these six key principles: The coachee as the expert on themselves, the use of open-ended questions to drive coachee resourcefulness, a focus on the whole person, the responsibility of the coachee to set the agenda, an equal-power relationship between coach and coachee, and a focus on action and change (Rogers, 2016). The RU-NB Academic Coaching program uses this set of principles to anchor its coaching framework.

As the body of research on academic coaching grows, studies show the beneficial impact of coaching for students and institutions. Academic coaching is correlated with higher performance and GPA (Capstick et al., 2019; Pechac, 2017) and has been shown to increase persistence, retention, and completion through building self-regulated learning skills and

self-efficacy as well as deepening the connection between students and institution (Kinsel & Cooke, 2018; Krimmel & Watt, 2020; Robinson & Gahagan, 2010). Significantly, the ameliorative effects of coaching on persistence and retention can outweigh that of other more costly interventions such as financial aid (Bettinger & Baker, 2011). Academic coaching can increase executive functioning and well-being (Field et al., 2013), a key benefit to institutions managing a growing number of students with mental health challenges and diagnosed ADHD.

More recent research has shown academic coaching drives specific measures of student success that relate to academic resilience. Exploring the effect of coaching on procrastination, one study found that individual coaching reduced procrastination with an effect size equal to that of group training and drove the highest goal attainment and satisfaction levels (Losch et al., 2016). Additionally, both in-person and online coaching conditions have been shown to increase metacognitive awareness (Howlett et al., 2020).

Self-Efficacy

One of the most consequential ideas to emerge from psychology research of the late 20th century was the role of perception in the drive to execute action. As defined by Albert Bandura, self-efficacy is "the belief in one's capabilities to organize and execute the course of action required to manage prospective situations" (1995, p. 2).

Perceived self-efficacy can affect motivation, behavior, and emotional arousal, all of which may drive or inhibit performance (Bandura, 1982), and exerts a strong influence on three interconnected dimensions: aspirations, level of motivation, and academic accomplishments (Bandura, 1993). When students believe they are capable of work and achievement (high self-efficacy), this increases motivation, which drives the actions necessary for learning; conversely, students believing they are incapable (low self-efficacy) tend to lack motivation, put in minimal effort leading to low performance, and then use performance measures to support their negative self-assessment. Student perception of self-efficacy as able to be developed over time with effort predicts higher performance and increased motivation to persist, while student perception of self-efficacy as fixed and immovable predicts lower performance and lower rates of persistence (Dweck, 2006).

The importance of self-efficacy in driving academic achievement has grown with the emergence of research on stereotype threat, defined as stereotype-associated negative perceptions that increase anxiety and pressure, reducing available cognitive load and leading to underperformance (Steele & Aronson, 1995). Improving the performance of historically excluded populations should be paramount for modern institutions with ever-increasing numbers of students from such

populations. Chung et al. (2009) examined causative links that identify self-efficacy, driven by state anxiety, as a mediator of the relationship between stereotype threat and performance. Stereotype threat has also been shown to be negatively associated with self-efficacy and positively associated with negative affect in a study of international language-minority students that also found a positive association between a sense of belonging and self-efficacy (Saroughi, 2019). Initiatives that aim to build self-efficacy and increase sense of belonging may then buffer stereotype threat for minoritized students, potentially contributing to improved academic performance.

The study of self-efficacy in the academic domain shows that academic self-efficacy (perception of one's academic capacities) correlates strongly with and predicts academic resilience (Cassidy, 2015). Students in Cassidy's 2015 study exhibited greater academic resilience in response to a personal vignette than to a vicarious vignette, highlighting the more significant power of self-efficacy regarding one's own performance over that of another person. In looking at the relationship between performance and non-cognitive factors of academic self-efficacy, motivation, and belonging, one study found self-efficacy more closely related to performance than the other factors (Han et al., 2017). Students who exhibit a higher level of belief in their capacity for learning, then, are more able to bounce back academically following adverse events.

Self-Regulated Learning

Although there are nuances to how different communities of educators interpret the concept, self-regulated learning can be defined as the degree to which students proactively participate in their learning processes, in the context of three specific domains: Metacognitive, motivational, and behavioral (Zimmerman, 2008; Zimmerman & Schunk, 2001). Students who self-regulate actively work to understand themselves as learners, use that self-knowledge to choose and implement appropriate learning strategies, monitor their progress, and adjust choices and actions over time as needed.

Multiple research studies over decades have linked self-regulated learning to successful academic outcomes. Student use of self-regulatory strategies predicts academic performance (Pintrich, 1993). Motivation – broken down into self-efficacy beliefs, task value beliefs, and goal orientation – is adaptive and can drive self-regulated learning practices (Pintrich, 1999). Self-regulated learning strategies have been shown to be a stronger predictor of mathematics and English achievement than either gender or socioeconomic status (Zimmerman & Martinez-Pons, 1986) and self-regulatory strategies strongly predict performance in course grades and intention to persist (Nota et al., 2004).

Research continues to develop an understanding of how interventions may increase student use of self-regulatory

strategies. In a 2016 study assessing high- and low-achieving students on self-reported self-regulated learning variables before and after an intervention, significant differences emerged; low-achieving students used low-effectiveness strategies which was reflected in GPA, and high-achieving students set specific goals, chose effective strategies, spent more time, and relied less on low-effectiveness strategies, thus were more accurate in their predictions of success (DiFrancesca et al., 2016). Combined interventions can have exceptional positive effects, as in a study where a combination of a self-regulated learning training and a learning diary drove higher self-regulated learning and academic transfer than did the training alone (Dorrenbacher & Perels, 2016).

Academic Resilience

In the quest to help human beings survive and thrive in the face of ever-increasing life challenges, research on psychological resilience over the last several decades has explored how people respond to adversity and what they can do to absorb and integrate life's pressures and traumatic events. Working to synthesize the work in this area, Fletcher and Sarkar (2013) note three key defining elements of the concept of resilience: The antecedent of adversity and the consequence of adaptation, a view of adversity as ranging from single traumatic events to ongoing life stresses, and the appropriateness of positive adaptations within the context of a particular adversity. Ultimately, they recommend "community-

based opportunities" (p. 20) that provide resources to help meaningfully develop resilience (Fletcher & Sarkar, 2013).

Over time as resilience was contextualized, academic resilience moved into focus. Academic resilience can be defined as "a capacity to overcome acute and/or chronic adversity that is seen as a major threat to a student's educational development" (Martin, 2013, p. 488). Research has found that academic resilience predicts enjoying learning, engagement in class, and general self-esteem (Martin & Marsh, 2006) as well as the use of coping measures and academic success (Cassidy, 2016). In a review of studies in this area, Waxman et al. (2003) advocate for designing interventions that address factors seen as "alterable," especially for students identified as at-risk. For educators supporting a growing population of students facing chronic or periodic trauma and adversity, finding ways to help students actively and adaptively respond to adversity is imperative.

Building on the finding that academic self-efficacy was determined to be a significant predictor of academic resilience (Cassidy, 2015), and seeking to move beyond measures of academic resilience focused on associated attitudes or characteristics, Cassidy (2016) created the 30-item Academic Resilience Scale (ARS-30) to measure academic resilience through student response to a hypothetical vignette. The ARS-30 is a "process-based measure...focused on adaptive and non-adaptive

cognitive-affective and behavioral responses to academic adversity" (Cassidy 2016, p. 3). The value of the process focus is echoed in a literature review that examines definition-driven, process-driven, and latent-construct approaches and acknowledges academic resilience as a dynamic process (Rudd et al., 2021).

Summary

Given the increased vulnerability to mental health challenges in university students, institutions of higher learning need to support the development of academic resilience to help cope with academic stress and change (Cheng & Catling, 2015). Self-efficacy and self-regulated learning play crucial roles in building self-awareness and metacognition, driving motivation, and choosing and adjusting behavior, all ultimately contributing to academic resilience. Because academic coaching strategies increase self-efficacy and the use of self-regulated learning strategies, they are a targeted, effective delivery vector for resilience-building interventions that support student persistence and success. This study aims to further the evidence connecting academic coaching to academic resilience and thus to persistence, retention, and positive outcomes for both students and institutions.

Methodology

Research Design

A quantitative approach was used for this study with non-experimental survey research. Survey research provides a numeric

description of trends or opinions of a population sample and can be implemented through pre- and post-tests (Creswell, 2014). Permission was received to use the 30-item Academic Resilience Scale (ARS-30), which was designed by Simon Cassidy to measure academic resilience based on subject response to a hypothetical adverse academic event. Students imagine themselves as having experienced this event and are then expected to respond to positively- and negatively-phrased statements using a 5-point Likert scale. This instrument was chosen to measure the degree to which students participating in the Back on Track Support Group experienced a change in academic resilience. Because the ARS-30 is focused on process rather than outcome, it is well-suited to measuring the effectiveness of this multiple-session initiative; because it aims to "assist the development of interventions aimed at fostering adaptive responses" (Cassidy, 2016, p. 10), it is salient for an intervention such as the Back on Track Support Group which intends to develop such responses in its participants.

Subjects from the general population are a single self-selected cohort. The Learning Centers disseminate information about the Back on Track Support Group to the RU-NB community through email, social media, website announcements, and flyers posted in the physical Learning Center spaces on all four RU-NB campuses. The opportunity draws students who self-identify as

experiencing academic challenges and are willing to commit to four weekly sessions. The program added a subgroup in Fall of 2023 consisting of School of Engineering (SOE) students placed on probation. A six-week version of the Back on Track Support Group was offered as one of the options from which these students could choose as part of their probation requirements. Results were analyzed for all students together as well as compared between the two subgroups.

The weekly one-hour sets of sessions are scheduled to begin after midterms, when students are likely to have evidence of performance status, but are completed early enough that participants can use the tools from the intervention as they move toward final projects and exams. Four groups – two four-week general population groups and two six-week SOE groups – run on different days and at different times and locations, to accommodate students' varying schedules. Groups meet in person in conference rooms and maximum participation is set at 20 students. Each group is facilitated by a full-time Academic Coach who is a professional staff member, and the same coach leads all sessions for any given group.

The session structure incorporates academic coaching principles and is designed to promote self-efficacy and self-regulated learning. Sessions begin with an "icebreaker" community-building prompt for thinking, sharing, and discussion. The coach then leads a segment

that incorporates content learning, followed by discussion and application using provided tools. Each session features a focus topic such as time management, growth mindset, and test preparation, with two additional topics specific to the SOE subgroup. Periodic reflection is provided through a SMART goal created and revisited by participants. The facilitators maintain a Canvas page for participants that offers session summaries, links to shared resources, electronic versions of hard-copy materials distributed, and discussion boards for those who wish to connect and further their conversations.

In addition to completing the ARS-30 pre- and post-assessment, at the end of the multiple-session intervention, all participants are asked to respond to a questionnaire designed to survey their impression and rating of the experience.

Research Procedures

Students sign up for the multi-session weekly support group via database registration accessed from the Learning Centers' website. Subjects complete the ARS-30 twice – once before the start of Session 1, and once at the end of the final session. The instrument is identical each time. Following the final administration of the ARS-30, subjects complete an evaluation survey of the experience. The ARS-30 instrument and survey are distributed electronically via QR code and can be completed on any electronic device.

The 30-item Academic Resilience Scale (ARS-30) presents a vignette characterized as happening to the subject, who answers the questions as though they are experiencing the event. Item construction is based on established literature in resilience, self-efficacy, and self-regulated learning concept domains. The scale contains positively- and negatively-phrased items, with the positively-phrased items reverse-scored such that a higher score indicates greater academic resilience. The instrument is multi-dimensional and has three sub-scale factors: Factor 1 is identified as perseverance (14 items), Factor 2 is identified as reflective and adaptive help-seeking (9 items), and Factor 3 is identified as negative affect and emotional response (7 items). Cassidy (2016) provides validity and reliability data with exceeding levels normally considered acceptable for internal reliability and a significant positive correlation between ARS-30 scores and academic self-efficacy (r=0.49). Results of the ARS-30 were analyzed based on change in full-scale score from initial to final completion, as well as change in each Factor (1, 2, and 3) from initial to final completion.

The Qualtrics survey is a self-report instrument created by the study authors based on the specific Back on Track Support Group intervention. The survey features a variety of question types (short answer, multiple choice, and Likert scale) and consists of the following questions:

1. How many Back on Track Support Group sessions did you attend? [multiple choice]

2. Please click the appropriate option according to the following scale: [Likert scale rating]

- Attending the support group increased my knowledge of and connection to campus resources.
- Attending the support group taught me some valuable skills I hadn't been taught before.
- I would recommend the Back on Track Support Group to my peers and classmates.
- Attending the support group helped me feel more motivated in my classes.
- The support group helped me address my academic difficulties and challenges.
- The academic coach was well prepared, knowledgeable, and engaging.
- What I learned in the sessions has helped/will help my grades improve.
- Being a part of the support group helped give me a sense of a community of others who face similar academic struggles.
- Attending the sessions helped me think about the way I study and about my overall academic performance.

3. Which topics were most helpful to you? (Select all that apply.) [multiple response]

- Time management, Study strategies, Motivation, focus, & mindset, Stress management, Test preparation, Other

4. What were the most significant ideas presented to you? [free response]

5. How could the Back on Track Support Group be improved and do you have any additional comments to share? [free response]

Qualtrics survey results were analyzed for information about perceived usefulness of topics and perceived value of aspects of the support group experience. Short answer comments were compiled and reviewed for future iterations of the support group session structure.

Additionally, GPA was examined to detect any change from previous semesters. Term GPAs were pulled for student participants from the semester they attended Back on Track Support Group as well as the semester afterwards to see if there was a change in average GPA. Lastly, the number of students who persisted from the semester they attended the group to the next semester was calculated. The Institutional Review Board approved the research at this institution.

Sample

The study used a comprehensive sample that included all participants of the Back on Track Support Group who completed all surveys and attended at least a majority of the total weekly sessions. Twenty-five students participated in total in the administration of the ARS-30 pre- and post- and forty-two students completed the Qualtrics survey. The GPA change sample included a total of 9 students from 2022 participants (as of this writing, 2023 participants do not yet have data from their next semester following participation in the Back on Track Support Group). (See Table 1 for a description of the participatory sample subsets.)

Table 1

Description of sample subsets

Description of sample subset	# students in sample (n)
Participants who attended at least one session and completed the Qualtrics survey during last session	42
Participants who attended majority of the sessions (3 out of 4 general population OR 4 out of 6 SOE) and completed both pre- and post- ARS-30 assessments	25
Participants who attended majority of the sessions, completed both pre- and post ARS-30 AND completed at least one semester after attending Back on Track with grades released for analysis during the time of this analysis (within 2022 groups)	9

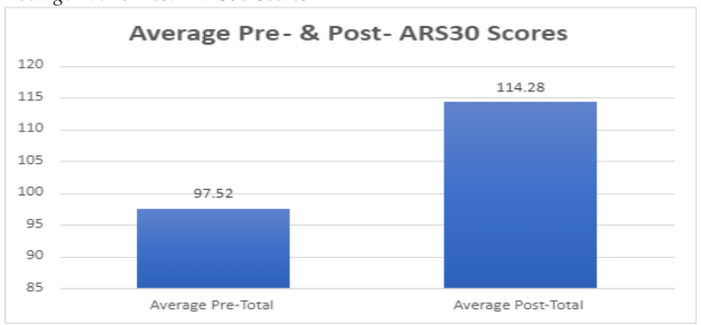
Results

A total of 25 students completed the Pre- and Post-Academic Resilience Scale (ARS-30) assessments from Spring 2022 through Fall 2023 after attending at least the majority of the Back on Track

Support Group weekly sessions (3 out of 4 sessions for the general population groups or 4 out of 6 for the School of Engineering Probation groups). Of the 25 students, the average pre-intervention ARS-30 score was 97.52 and the average post-intervention ARS-30 score was 114.28, with an average positive change of 16.76 points (or a 17.2% average overall change), as seen in Figure 1.

Figure 1

Average Pre- & Post- ARS30 Scores



Pre- and post-intervention ARS-30 scores were also divided out by factor-linked question groups, as seen in Figures 2 and 3 of the Appendix. Factor 1 represents questions grouped into the category of "perseverance," Factor 2 represents "reflecting and adaptive help-seeking," and Factor 3 represents "negative affect & emotional response." There was a positive change in all factors: an average change of 5.7 (11.4% change) was noted for Factor 1, 4.4 points (14.7% change) for Factor 2, and 6.8 points (40.0% change) for Factor 3.

Figure 2

Average Factor Scores in ARS30

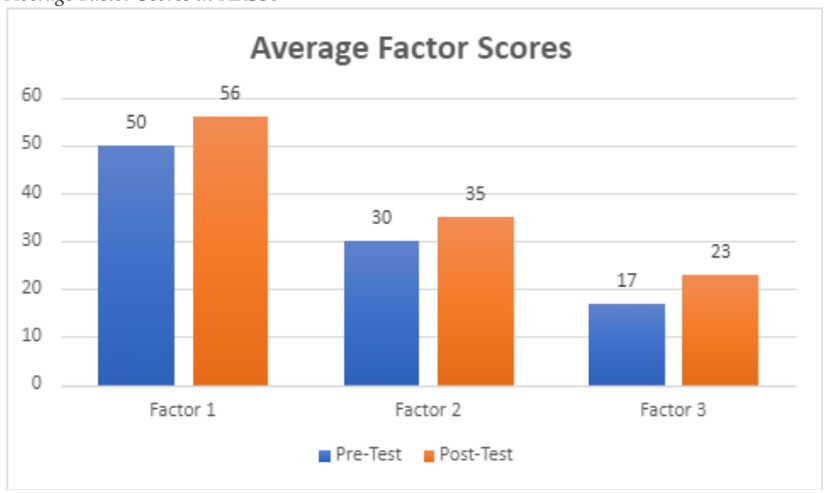
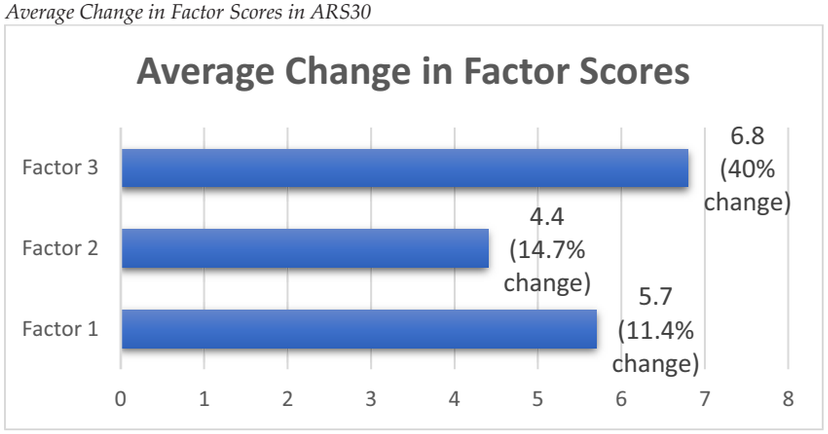


Figure 3

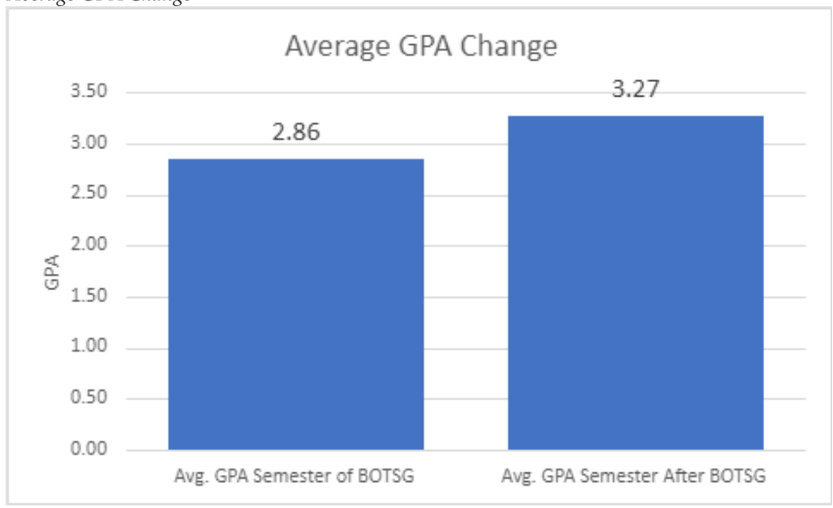
Average Change in Factor Scores in ARS30



Nine students attended at least three sessions of the Back on Track Support Group in either Spring 2022 or Fall 2022. Averaged together, their GPAs showed an increase from 2.86 in the participating semester to 3.27 the semester after participating, which notes an average 14.3% change, as seen in Figure 4.

Figure 4

Average GPA Change



All but one of these nine completing students from Spring 2022 and Fall 2022 persisted from the semester they attended the Back on Track Support Group to the next semester – approximately 89%. Additionally, all five of the students completing the Spring 2023 Back on Track Support Group experience enrolled in full-time coursework for Fall 2023.

General Population v. School of Engineering Probation Students – Fall 2023

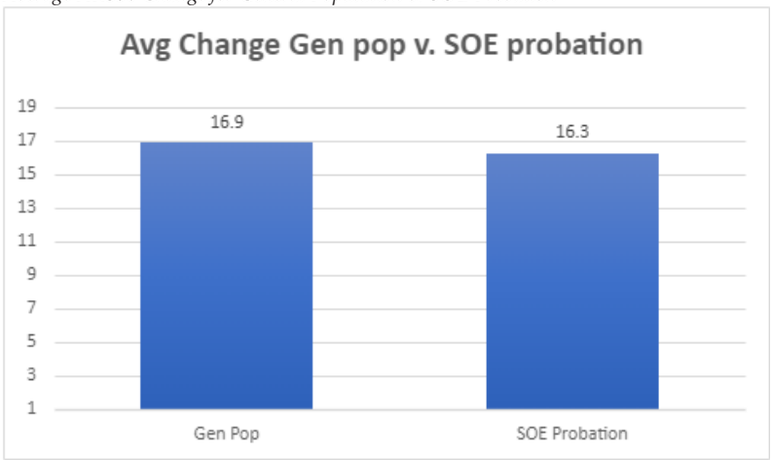
In Fall 2023, the Learning Centers piloted a subgroup of the Back on Track Support Groups open only to School of Engineering students who were placed on probation. As a part of their probation requirements, all students had to register for one intervention from a variety of options to choose from. Some of these options included a 1-credit course Methods of Inquiry, 8 one-on-one academic

coaching sessions, and a 6-week version of the Back on Track Support Group. Six students attended a majority of the sessions and completed the pre- and post-assessments as a part of this mandatory subgroup and the results were compared with the 19 students from the general population group.

When comparing ARS-30 scores for the general population and the SOE probation group, there was a similar average change across both subgroups. The general population's average change in pre- to post-test scores was 16.9 and 16.3 for the SOE probation group, as seen in Figure 5.

Figure 5

Average ARS30 Change for General Population v. SOE Probation

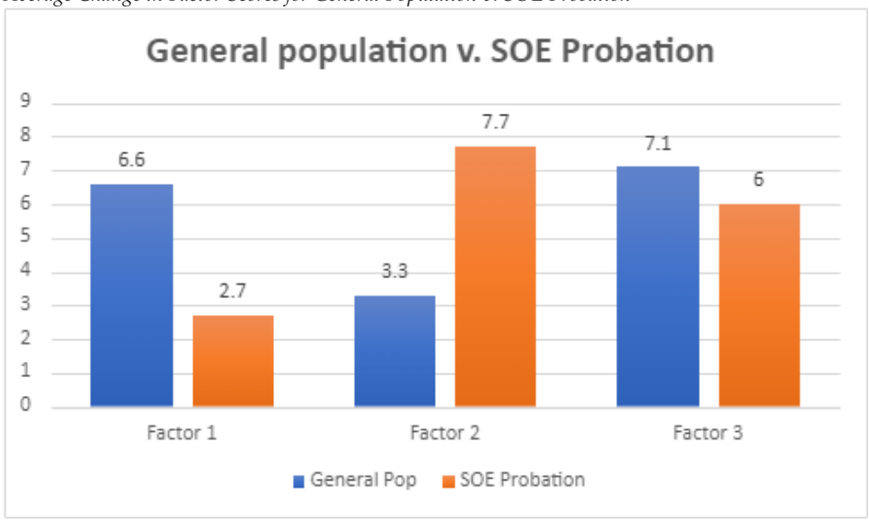


However, when examining changes in the three-factor categories, we saw a remarkably lower change in Factor 1 (questions relating to persistence) for the SOE probation group and a remarkably bigger change in Factor 2 (questions relating to

reflective and adaptive help-seeking) for the SOE probation group. As shown in Figure 6, the average change in Factor 1 for the SOE probation group was 2.7 compared to 6.6 for the general population. Factor 2 had an average change of 7.7 in the SOE subgroup compared to a 3.3 for the general population. Factor 3 (questions related to negative affect and emotional response) had a similar average change, with the general population group being slightly more than the SOE subgroup.

Figure 6

Average Change in Factor Scores for General Population v. SOE Probation



Student Survey

Forty-two students completed the student survey after participating in the Back on Track Support Group from Spring 2022 through Fall 2023. Most notably, 100% of students responded Agree or Strongly Agree when asked if the academic coach was well prepared, knowledgeable, and engaging; 87.87% agreed or strongly

agreed that the group experience increased knowledge of and connection to campus resources; 84.85% agreed or strongly agreed that being part of the support group helped give a sense of community; and 93.94% agreed or strongly agreed that the sessions helped them think about the way they study and about their academic performance. (See Table 2.)

Table 2
Qualtrics Survey Responses

#	Question	% of Strongly Agree or Agree responses	# of Strongly Agree or Agree responses	Total responders
1	Attending the support group increased my knowledge of and connection to campus resources.	**87.87%**	29	33
2	Attending the support group taught me some valuable skills I hadn't been taught before.	**72.72%**	24	33
3	I would recommend the Back on Track Support Group to my peers and classmates.	**81.25%**	26	32
4	Attending the support group helped me feel more motivated in my classes.	**81.81%**	27	33
5	The support group helped me address my academic difficulties and challenges.	**72.72%**	24	33
6	The academic coach was well prepared, knowledgeable, and engaging.	**100%**	33	33
7	What I learned in the sessions have helped/will help my grades improve.	**69.69%**	23	33
8	Being a part of the support group helped give me a sense of community of others who face similar academic struggles.	**84.85%**	28	33
9	Attending the sessions helped me think about the way I study and about my overall academic performance.	**93.94%**	31	33

Student participants were also asked which topics they felt were most beneficial. Students were given the option to select multiple topics. Topics most often selected were (1) time management, (4) stress management, and (3) motivation, focus, and mindset, with the most students (25 out of 42) choosing (3) motivation, focus, and mindset. (See Table 3.)

Table 3
Qualtrics Survey Topics

Answer	% who selected	Count
(1) Time Management	50%	21
(2) Study strategies	48%	20
(3) Motivation, Focus, & Mindset	60%	25
(4) Stress Management	52%	22
(5) Test Preparation	33%	14

Lastly, students were provided the opportunity to leave open free responses to qualitative questions in the survey. Three standout responses are included:

- "The most helpful idea was the task organization which helped me organize my assignments and projects by urgency and importance. It helped me feel less overwhelmed by all the work I still had to do."
- "I loved how it focused on us as people rather than only students. We talked about more than just school and we were able to talk about life in general. The tools taught here aren't only for school but can help everywhere."
- "That it is good to have goals and setting yourself up for success is possible even if you fall a little behind."

Discussion

Overall, ARS-30 change measures and survey responses were positive for the participants of the Back on Track Support Group who attended at least majority of the sessions and who completed all assessments and surveys, and average GPA change was positive for the subset of students attending in 2022 for whom subsequent semester GPA was available.

Students in the sample showed an average positive change of 16.76 points in their overall ARS-30 score, indicating a remarkable increase in academic resilience as measured by the instrument. Separating the results by the three identified factors of academic resilience raises interesting questions about what may prompt growth in which areas. Students averaged the greatest positive change – 6.8 (40% change) – in Factor 3, negative affect and emotional response, possibly in connection with the initiative's focus on motivation, focus, and mindset (also the item in the Qualtrics survey that most students cited as a beneficial topic). The academic coaching principles of a no-judgment space, along with the stated goal to build community, may also contribute. Factor 1 measures grew by an average of 5.7 points, indicating an increase in both affect and actions driving persistence. Although Factor 2 – reflecting and adaptive help-seeking – showed the smallest increase, 4.4, one may surmise that the self-selected nature of the experience drew participants

who average a higher willingness and ability to seek help than does the general student body, and therefore did not grow in that factor area as much as they did in others. This was further shown in the mandated SOE probation subgroup where Factor 2 had the greatest increase in this population of students of 7.7 points. SOE students from this subgroup also had the least average change in Factor 1, persistence, which was interesting to note as well.

Student responses to the Qualtrics survey indicated a positive response across the board. With 100% of the sample responding Strongly Agree or Agree to the academic coach being well-prepared, knowledgeable, and engaging, and 84.85% responding Strongly Agree or Agree to the experience of building their connection to others with similar struggles, the experience seemed to accomplish the goal of increasing self-efficacy through building engagement with a non-judgmental community. The goal of building self-directed learning habits and actions may be reflected in 93.94% of the sample responding Strongly Agree or Agree to the experience making them think about the way they study and their overall academic performance. Out of the five topics students were given the opportunity to check as beneficial to them, study strategies and test preparation were the two lowest, with 48% and 33% of the sample, respectively, selecting those topics. In general, the more affective, self-efficacy-related, and personal regulation-related topics were seen as most beneficial, with Motivation, Focus,

and Mindset coming in first at 60% of the responders, Stress Management second at 52% of responders, and Time Management third at 50%. Freeform responses tended to be linked to affect ("less overwhelmed") and self-regulation ("organize my assignments and project") as well as providing the possibility of increasing self-efficacy across a wide range of application ("The tools taught here aren't only for school but can help everywhere.")

For the nine participants from 2022 for whom GPA data for the subsequent semester was available at the time of the analysis, the average change in GPA was a positive 0.41, nearly half a letter grade. Although this is heartening, the small sample size and the wide variety of factors that may drive the increase make it difficult to ascertain the role that the Back on Track Support Group experience played in this measure. However, it suggests that the increase in self-efficacy and self-regulated learning may drive actions that support performance growth, and therefore GPA, over time. This could be further examined in future iterations and an increase in the number of participants, especially for probation students.

The results of this study demonstrate the value of the Back on Track Support Group. This initiative can be seen as a direct response to the call for more affective or motivational programs

needing to be developed and implemented (Waxman et al., 2003).

Limitations

This initiative is relatively new, and the sample size was small, with only 25 participants who completed all assessments. For the investigation of change in GPA, the sample size is even smaller because the next-semester data was not yet available for 2023 participants at the time of analysis. The same goes for the comparison group of SOE probation students since it was only launched for one semester up until the time of the study.

Although the self-selected group increases the confidence that participants will be motivated and committed to the experience, it must be acknowledged that the definition of what constitutes "off track" is subjective and may vary widely. Although some students were on probation while participating, others may have joined because of a low grade or two; whereas some students may join because they are failing some or all courses, others with exceptionally high expectations of themselves may consider anything but an A to be "off track."

A notable limitation is the voluntary, non-credit-bearing nature of the initiative for the general population groups. This created an attendance challenge as there was no real consequence for absence at one or more weekly sessions other than the potential missed opportunity. While a total of forty-two students completed the student survey at the end of the final sessions, we were only able to

collect data from twenty-five students who attended majority of the sessions and had completed both the pre- and post- ARS30.

The marketing of the initiative presents limitations, as with a self-selected group, the participants are limited to students who both saw the information about the initiative and decided to join. Although the Learning Centers disseminate information about the Back on Track Support Group via both electronic and hard copy venues to the entire University community, it cannot ascertain who receives it.

The self-reporting for both the ARS-30 and the Qualtrics survey means that responses reflect the variable lenses of individual participants. Additionally, having all students responding to a single academic adversity vignette through the ARS-30 does not consider other types of adversity or clusters of adversities students may face, how they may respond to those, and whether they would respond differently to non-academic adversities that affect their academic performance. Furthermore, although the vignette is written as though it was happening to the responding student, it may not be as compelling as an actual personal adversity.

Future Considerations

More work is needed to explore how participating in the Back on Track Support Group may build academic resilience and drive persistence and success. In addition to the need to continue

the initiative to expand the sample size over time, one new area of exploration is to continue to compare the results from the self-selected sample to the mandated SOE probation group. Since Fall 2023 was the piloting of the SOE probation groups with 6 weekly sessions as opposed to 4, we will need to continue to do formative assessments to make further improvements targeted to the specific populations.

It would also be valuable to have a control group alongside the Back on Track Support Group sample, or to examine average scores in general of students who did not attend the Back on Track Support Group or who experienced a different type of intervention. For example, the School of Engineering offers all probation students numerous options to choose from during the semester they're placed on probation. Running regression analyses of these various groups could allow an investigation of the correlation between attending the Back on Track Support Group and their academic resilience and factor scores as well as GPA change.

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Book Review: *Institutional Ethnography as Writing Studies Practice*

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> In the course of their everyday work, individuals constantly negotiate their responsibilities, experiences, and identities not only within the institution but also collaboratively among each other. (Book, 2023, p. 63)

Institutional Ethnography as Writing Studies Practice, edited by Michelle LaFrance and Melissa Nicolas and published in 2023, is a text that compiles chapters by various authors on the subject of institutional ethnography, hereafter referred to as IE. IE is not directly defined in the book but is referred to as a tool for campus-wide self-reflection, a method for studying one's institutional environments, and a way to understand and address the problems that can grow from the too-common disconnect between administration and student-facing workers. The book comprises a collection of chapters written by various authors, all working in and around writing programs and centers. These authors each have their perspectives, but all use IE to examine their places of work to identify and confirm issues that might otherwise be obscured by the language and culture of their colleges and universities: "When we

are more attuned to the many different value systems and material realities at work within our sites of study, when we better understand how personal value systems shape classroom, program, and campus practices, we are also more effectively situated to support the people we work most closely with and for" (LaFrance, 2023, p. 9). The book, then, through its authors, applies this approach to both gain institutional knowledge and facilitate meaningful changes at the respective campuses of each author.

Generally, the perspective is that of directors of tutoring, writing, and student centers, so the broad POV is that of tutoring center directors and writing program coordinators who sit, sometimes uncomfortably, between the higher levels of administration and the day-to-day work of their centers. Chapters in the book can be read in any order, as they all perform IE in their unique contexts with unique applications, though the first chapter sets up much of the core terminology and approach and is foundational in that way.

Though differing chapter by chapter, this essential point of view carries over to the intended audience, which appears to be directors, instructors, and other administrative leaders of writing centers/programs. This is usually not explicit but manifests partly through highly academic language. Fairly early on in the text, for example, an undefined acronym is used, "CHAT," followed closely by the terms "blob ontology" and "God trick," which are briefly discussed (LaFrance, 2023, p. 21). This sort of rhetoric and

composition jargon features prominently early on but varies in intensity between chapters. One effect of this use of language is that the reader is implicitly asked to think about and consider developing their institutional language. After all, language is the focus of writing programs and the tea we're steeped in. The methodology and approaches to the book's chapters are also aimed at administrative and instructional positions. Chapter 7, for example, examines an administrator's role in providing WAC (writing across the curriculum) services to their university. Institutional ethnography lends itself to this sort of study, so to get a good sense of an institution's culture and disposition, familiarity with its power structures, internal hierarchies, and modus operandi is necessary. This means that those conducting IE must have access to information of this kind, which most staff do not. This may be considered a limitation, but it is one that gives the book a certain dedication to its focus. Students are discussed as relevant to a chapter's methodology and findings but not generally central to research. The authors' approach ethnography in their way, but all use IE as a way of examining, defining, and ultimately wrestling with the academic cultures they find themselves immersed in and a part of.

A major intention of the text is the outward growth of institutional reflection. By providing accounts of IE at each author's campus, the reader is asked to consider their own colleges and

universities to gain the same sort of insights and conceptual tools as the book's authors. I read this book with several fellow writing tutors, and the desire for similar introspection for productive institutional reflection directed our discussion. Our readings left us wondering how comparable studies would look on our campus and if our held ideas about the language and texts of our institution were accurate. How does our place of work influence, or even (in)directly determine, our local tutoring culture? In what ways do the texts we use and interact with influence our ways of thinking about our work and how we interact with students? The text inspired these sorts of potentially fruitful questions. .

Institutional Ethnography As Writing Studies Practice consists of three parts containing a total of eight chapters. Part one, "On Practice, Work, and Work Practices," largely focuses on extended definitions and applications of the aforementioned terminology. Part two, "Dynamic Practices: Actualities of Writing Program Work," connects chapters that dig into the nitty-gritty of writing program/center work in contrast to various institutional forces. Part three, "Expanding Understandings of Institutional Coordination," explores how those working within academic institutions can both understand and reckon with the cultures they find themselves in. To buttress these ideas, the introductory chapter of LaFrance and Nicolas' collection begins by giving context to the core terminology used throughout the book – principally "institutions" but also

several other frequently used terms, such as "ruling relations" and "standpoint" (LaFrance, 2023, 7)**.** These terms are used frequently throughout the book, shifting in context and application as they morph to fit the various studies.

The book's core ideas vary somewhat, as each author addresses IE differently, but this is functional, as it lets the reader hop around chapters and explore the overarching concept. Most of these ideas tie back into the focus, again, on terminology and language. So, for example, an important point the book makes is about defining "work" and "practice." From LaFrance (2023) in the book's first chapter:

> Work practice, we argue, is a significant entrance point into the relational complexities of our institutional lives. A focus on work practices, in our teaching, writing program leadership, interactions with student writers, and research endeavors, helps researchers to uncover telling micro-moments where the institution takes on a very particular shape, reflective of many complex site-specific tensions. Because IE is interested in how knowing individuals carry out their work in coordination across time and space with others and demonstrating uniquely individualized understandings of the expectations, norms, beliefs and sensibilities most active within a site, an attentive study of work practice, we argue, is one way that writing studies

> researchers might uncover how powerful and interrelated influences, such as social values, beliefs, norms, professional standards, and/or disciplinary ideals, often implicitly order the hierarchical environments of our interest. (p. 4)

Other chapters shift the focus in various directions, but all refer to the concepts contained here. IE is a tool capable of inspecting and dissecting institutional conventions, especially when contrasted with the work writing centers and programs do daily.

Most chapters in the book use on-site research of various kinds to reveal aspects of the hierarchies and cultures at play within their respective universities. Elisabeth Miller (2023), in Chapter 6, for example, approaches IE by "analyzing survey responses from current and former MWA [a campus community writing program] instructors as well as program materials" to "show how taking an IE approach to studying the work experiences and perspectives of MWA instructors expands our knowledge about 1) the tensions that often arise in community and university partnerships, and 2) the work of community writing instructors—contributing to the broader theory and practice of community literacy programming" (p. 97-98). Evidence of this kind, common throughout the book, is compelling but only goes so far. Here, the evidence gathered is interesting but somewhat insular, as it can be difficult to apply the conclusions and insights of the chapter to one's campus. Most chapters in the book feel like a first step and lack the robust

implementation that would help writing centers of other campuses improve their own practices. It could be, however, that in applying IE in these various novel, idiosyncratic settings, the concept itself is beneficially pushed in new directions. In that sense, even when it isn't clear what to do with the information and conclusions being presented, there is value in the ethnographies themselves as distinct bits of experiential work - that is to say, IE requires work and is experienced in researching it.

The book's chapters are well-supported by writing center theory and other relevant research so that all the concepts discussed and approaches feel grounded in both "classic" works like Stephen North's 1984 piece "The Idea of Writing Center" and articles from more recent publications, such as Alison Griffith and Dorothy Smith's *Under New Public Management: Institutional* from 2014. This foundational research, often there to support and help explain terminology, does mean that much of the book is quite dense with fairly narrow concepts, ideas, and terminology.

Institutional Ethnography as Writing Studies Practice, then, is noteworthy for its use of terminology to explore a single, complex concept – IE. Because the book was focused on methodology and self-study, chapters often ended with as many questions as answers. This isn't a flaw per se, but it potentially leaves readers without a clear grasp of how to use the data and conclusions found in the various studies. One might ask after reading, as the authors

themselves sometimes do, "We understand our institution and its machinations better – good. Now what?" This isn't meant to be facetious – rather, there are moments, usually at the end of a chapter, that prompt additional self-reflection and even further question-asking. The next step, then, would be to take the book's revelations and attempt further practical applications. How did the centers and programs in the text change their practices after their IE respective studies? Were their institutions resistant? Were significant improvements made, or is change-making an ongoing struggle? These questions are partially answered in some cases, but in others, there's a clear potential for future research and work. Answers to these sorts of questions would be interesting, helpful continuations of the material presented here. One could imagine an ethnography exploring tutor-on-tutor learning and knowledge-sharing or another that focused on how institutional language affects students. Another approach might be to ask how tutoring centers are positioned in institutions alongside the various programs and action plans that end up relying on them. As an exploration of institutional ethnography and an impetus for writing/tutoring centers to conduct their own IE research, the book reads well. It struggles more as a guide for what to do once these sorts of studies have been conducted, though it may be that the assumption is each center director can do with that knowledge as suits them. With all this in mind, *Institutional Ethnography as Writing Studies Practice* is a text that prompts thoughtful, helpful questions for those engaged in writing studies and center work and is worth reading in that context.

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Evaluation of a Peer-Led Pharmacy Learning Community 2019-2023

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Abstract

This study examined a change in delivery (in-person and virtual) for a pharmacy student-learning community within the context of ongoing program assessment during 2019-2023. First and second-year pharmacy students (n=145) reported their perceptions of the learning community's impact on academic success, professional development, and social interactions (1=strongly disagree, 9=strongly agree). Overall, students agreed that the learning community assisted with academic success (M=6.9-7.7), professional development (M=6.8-7.4), and social interactions (M=6.9-7.5). Student perceptions did not differ significantly with virtual programming. Accessibility of the peer mentors was a positive aspect. Non-participating students responded as unaware of the learning community and preferred studying alone. Ongoing evaluation will target student engagement and progression.

Keywords: learning community, peer-assisted learning, pharmacy student, assessment

Evaluation of a Peer-Led Pharmacy Learning Community 2019-2023

Learning communities composed of intentionally designed groups of students who actively engage in learning with and from each other are common within health profession programs (Heemskerk, 2021; Stevens, 2024; Zeeman et al., 2022). Pharmacy programs use peer-assisted learning to optimize student success in clinical and didactic areas of the curriculum (Cole et al., 2018; Loda et al., 2019; Noroozi et al., 2023; Nwaesei & Liao, 2023; Slabbert & du Plessis, 2021; Spivey et al., 2021; Zhang et al., 2020). Pharmacy learning communities are peer-assisted, program-specific initiatives developed to optimize study skills within required courses (Moser et al., 2015; Spivey et al., 2021; Zeeman et al., 2022). Within pharmacy learning communities, student peer mentors provide near-peer teaching and offer wellness, social, and emotional support (Zeeman et al., 2022). During the COVID-19 pandemic isolation, many learning communities adopted a virtual program format and then implemented a combined virtual and in-person (hybrid) format when in-person courses resumed. Ongoing learning community evaluation is imperative for program improvement (Moser et al.,

2015; Zeeman et al., 2022), and many programs conduct annual evaluations of their learning communities through student surveys (Moser et al., 2015). The purpose of this paper is to examine pharmacy students' perceptions of the learning community at one university and its effect on academic success, professional development, student-peer mentor relationships and social interactions, and to identify areas for improvement during 2019-2023. The changes in program delivery format during the COVID-19 pandemic isolation period are examined within the context of ongoing program evaluation.

Involving pharmacy students in peer teaching activities develops skills, competency, and knowledge for life-long learning and teaching as healthcare providers (Nwaesei & Liao, 2023; Secomb, 2008). The social and cognitive alignment between peers and near-peers can overcome performance barriers for students who may be more comfortable working with high-achieving peer mentors versus faculty (Carr et al., 2016; Loda et al., 2019; Maccabe et al., 2019). Peer mentors may recognize student difficulties in accomplishing learning objectives that are not readily apparent to faculty. In addition, based on their experiences as students, peer mentors may provide more accessible explanations of course-related information (Cole et al., 2018; Loda et al., 2019).

Peer mentors develop longitudinal relationships with mentees throughout the program and beyond, fostering support and

professionalism (Blake-Beard et al., 2021). Student pharmacist learning is enhanced within peer-led small groups that promote collaboration (Spivey et al., 2021). Pharmacy student-led learning programs include the RxReady program for reinforcing pharmacotherapy knowledge, objective structured clinical examination (OSCE) preparation sessions, and peer-led study groups (Cole et al., 2018; Tsai et al., 2021; Varshney & Mason, 2019). Peer-led, small-group collaboration is a successful strategy for optimizing student performance in challenging courses (Spivey et al., 2021).

This university offers an accredited, four-year Doctor of Pharmacy degree to approximately 100 students per class. The pharmacy program established a peer-led learning community, the Student Pharmacist Learning Community (SPLC), in 2009 to promote student collegiality and success among second year (P2) students during a challenging point in the curriculum (Moser et al., 2015). Attendance at these in-person learning community sessions was mandatory, changing to voluntary in 2014 secondary to student feedback and resource allocation.

Student focus groups reported that mandatory attendance at learning community sessions created scheduling conflicts with their internship work hours, participation in professional organizations, and home responsibilities. Our learning community also experienced a decrease in funding during this

time, which impacted our ability to support a sufficient number of peer mentors for mandatory sessions with the entire P2 class. In 2018, with the implementation of the renewed curriculum, first-year (P1) students were included in the learning community to assist them with the transition from undergraduate studies to a professional program.

Peer mentors for the SPLC are high-performing third year (P3) students selected via interviews with faculty and education specialists to serve for the academic year. For their service, the peer mentors receive a stipend from the College of Pharmacy and the university Learning Community Program. A pharmacy practice faculty and an education specialist serve as co-coordinators to supervise and guide the peer mentors. The mentors attend monthly one-hour professional development sessions led by the educational specialist and faculty. The sessions include deep skill building, professional identity formation, and metacognition facilitation supported by pre-work self-study materials. Peer mentors are assessed using reflection and formative feedback.

The peer mentors receive direction from the SPLC coordinators in developing study skills sessions and providing peer-to-peer academic coaching. The mentors facilitate metacognition sessions to support notetaking and review of material in the P1/P2 pharmacotherapy modules and other rigorous courses including P1 Pathophysiology. We implemented this evidence-based

metacognition method of review for these challenging courses to target improved learning (Vrugt & Oort, 2008). The peer mentors communicate with P1 and P2 course coordinator faculty to ensure continuity of study skill strategies with course and module learning objectives. The over-arching goal is development of student study skills, problem-solving strategies, and self-efficacy rather than simply providing content knowledge.

Program evaluation using annual student survey assessments has been standard practice for our learning community since the program's inception. A three-year evaluation (2009-2012) of the SPLC demonstrated a significant impact on program progression (Moser et al., 2015). The on-time graduation prior to the learning community was 83.8% compared with 91.4% post-program implementation ($p=0.003$). For the last three years, the on-time graduation rate for the pharmacy program was 91% (2021), 94 % (2022) and 98% (2023), exceeding national standards (Accreditation Council for Pharmacy Education, 2023).

Historically, the SPLC offered in-person activities on campus, immediately before or after classes. During 2020-2021, in response to the COVID-19 pandemic isolation, the SPLC adopted a virtual program format. The peer mentors provided students with individual support through email and video chat; large group review virtual sessions were recorded and accessible to all

students on the SPLC learning management system. To minimize student isolation, peer mentors conducted virtual social networking sessions for P1 students who were experiencing their first year in a solely remote environment. As the pandemic isolation restrictions eased during 2021-2022, a combined virtual and in-person (hybrid) format was implemented for consistency with the resuming in-person courses. The hybrid format continued through 2022-2023 based on informal student feedback and attempts to increase accessibility. The purpose of this survey study is to examine students' perceptions of the SPLC's effect on academic success, professional development, their relationships with peer mentors, and social interactions, and to identify areas for program improvement during 2019-2023, taking into consideration the format changes during that timeframe.

Methods

Study Design and Data Collection

The Institutional Review Board deemed this review of de-identified, aggregate survey responses of first- and second-year students enrolled in the Doctor of Pharmacy program as exempt from human research review. Student perceptions of the learning community are assessed through annual surveys as part of routine program improvement. All P1 and P2 students received an email from administrative staff containing the de-identified survey link (Qualtrics, Provo, Utah, USA). Participation in the survey was

voluntary. Students received the survey during the first week of the winter semester to allow the coordinator to review and implement required program changes within the current academic year. The surveys remained open for one month. Students received an email reminder two weeks before the survey closure date. The study team reviewed datasets containing aggregate responses from voluntary de-identified Qualtrics surveys of P1 and P2 students during winter semester of academic years 2019-2020 through 2022-2023.

Survey Instrument

A team of pharmacy practice faculty developed the 12-item Qualtrics internet survey in 2014 (Appendix A). The item regarding attendance at SPLC activities was revised in 2020 to include attendance at virtual and hybrid events to reflect the change in program format. Items addressed student perceptions regarding SPLC program objectives of academic success, professional development, social interaction with classmates, and student relationships with the peer mentors. The survey concluded with two open-ended questions asking students to list a positive aspect of the learning community and one area for improvement.

Statistical Methods

De-identified survey data were exported from Qualtrics, and descriptive statistics were performed for all variables included in

the model. Mean responses to survey items were compared across academic years using a repeated-measures analysis of variance (ANOVA). The level of significance for all statistical tests was a p value less than 0.05, two-sided, with p values less than 0.10 reported. Data were analyzed using Microsoft 365 Excel version 2023. Student comments from free-text response survey items were grouped by positive and negative categories (Hsieh & Shannon, 2005). Responses explaining why students did not use the learning community were grouped separately.

Results

Response Rate

One hundred forty-five P1 and P2 students of the 774 enrolled in the pharmacy program during the fall semester of 2019 through the winter semester of 2023 completed the survey in its entirety, providing an overall response rate of 18.7% (145/774). Table 1 summarizes the survey response rate by class and academic year. Overall, a greater number of P1 students compared with P2 participated in the survey.

Table 1

Survey Response by Program and Academic Year

	Total Responses (n=145)	P1 (n=90)	P2 (n=55)
2019-2020	46	31	15
2020-2021	50	39	11
2021-2022	30	3	27
2022-2023	19	17	2

P1=first professional year; P2=second professional year

Student Perceptions

Responses to the survey perception items were in a 9-point Likert scale format (strongly disagree, disagree, moderately disagree, mildly disagree, undecided, mildly agree, moderately agree, agree, and strongly agree) and are summarized in Table 2. Responses to perception items by academic year are summarized in Table 3. Students moderately agreed/agreed that learning communities are beneficial in improving academic success in the program (Question #6). There was no difference in response over the four years (M=6.9 - 7.7), ($F(3,106)=1.46$, $p=0.23$). Students were asked about relationships with the mentors enhancing their understanding of expectations of the pharmacy curriculum (Question#7). On average, student response (M 6.6-7.1, moderately agree) did not differ over the four years ($F(3,109)=0.36$, $p=0.78$).

Table 2
Student Perception of the Student Pharmacist Learning Community 2019-2023

Survey Item	**n (%)[a]**
Learning communities are beneficial in improving academic success of students in the program	
Strongly disagree	0 (0)
Disagree	2 (1.4)
Moderately disagree	0 (0)
Mildly disagree	9 (6.2)
Undecided	11 (7.6)
Mildly agree	14 (9.7)
Moderately agree	15 (10.3)
Agree	11 (7.6)

Strongly agree	47 (32.4)
Learning communities have a strong impact on professional development of students in the pharmacy program	
Strongly disagree	0 (0)
Disagree	3 (2.1)
Moderately disagree	3 (2.1)
Mildly disagree	15 (10.3)
Undecided	5 (3.5)
Mildly agree	14 (9.7)
Moderately agree	17 (11.7)
Agree	14 (9.7)
Strongly agree	43 (29.7)
Building relationships with P3 mentors through the learning community enhanced my understanding of expectations of the pharmacy curriculum	
Strongly disagree	3 (2.1)
Disagree	1 (0.7)
Moderately disagree	4 (2.8)
Mildly disagree	17 (11.7)
Undecided	9 (6.2)
Mildly agree	13 (9.0)
Moderately agree	17 (11.7)
Agree	5 (3.5)
Strongly agree	44 (30.3)
Learning communities fulfill an academic need in the pharmacy program	
Strongly disagree	2 (1.4)
Disagree	0 (0)
Moderately disagree	1 (0.7)
Mildly disagree	10 (6.9)
Undecided	7 (4.8)
Mildly agree	13 (9.0)
Moderately agree	25 (17.2)
Agree	5 (3.5)
Strongly agree	51 (35.2)
Learning communities allowed students to increase social interaction with one another	
Strongly disagree	1 (0.7)
Disagree	1 (0.7)

Moderately disagree	2 (1.4)
Mildly disagree	12 (8.3)
Undecided	8 (5.5)
Mildly agree	15 (10.3)
Moderately agree	21 (14.5)
Agree	6 (4.1)
Strongly agree	46 (31.7)

P3=third professional year.
[a] Missing responses caused different total (n) for individual items; sum of percentages may not equal 100% because of rounding.

Table 3
Student Perception of the Learning Community by Academic Year

Survey Item[a]	2019-2020 M (SD)	2020-2021 M (SD)	2021-2022 M (SD)	2022-2023 M (SD)	F	p-value
Learning communities are beneficial in improving academic success of students in the program	6.9 (1.6)	7.7 (1.6)	7.6 (1.6)	7.1 (2.2)	1.46	.23
Learning communities have a strong impact on professional development of students in the pharmacy program	7.2 (1.5)	7.3 (1.9)	7.4 (1.9)	6.8 (2.1)	.39	.76
Building relationships with P3 mentors through the learning community enhanced my understanding of expectations of the pharmacy curriculum	6.7 (1.9)	7.1 (2.1)	7.0 (2.3)	6.6 (2.2)	.36	.78
Learning communities fulfill an academic need in the pharmacy program	7.0 (1.7)	7.8 (1.5)	7.4 (2.0)	6.8 (2.5)	1.63	.19
Learning communities allowed students to increase social interaction with one another	7.0 (1.6)	7.5 (1.6)	7.3 (2.3)	6.9 (2.0)	.70	.55

P3=third professional year, M (SD) = mean ± standard deviation.

[a] Survey responses were in the 9-point Likert format (1=strongly disagree, 2=disagree, 3=moderately disagree, 4=mildly disagree, 5=undecided, 6=mildly agree, 7=moderately agree, 8=agree, 9=strongly agree).

Students moderately agreed that learning communities have a strong impact on professional development (Question #8), M 6.8 -7.4 (F(3,110)=0.38, p=0.76). On average, students perceived the learning community fulfills an academic need in the program (Question #9) M 6.8 - 7.8 (moderately agree – agree) (F(3,110)=1.63, p=0.19). Overall, students moderately agreed/agreed that the learning community allowed increased social interactions with classmates (Question #10) (M 6.9 -7.5),(F(3,108)=0.70, p=0.55).

Qualitative Responses Regarding the Learning Community

Students had the opportunity to provide comments regarding positive aspects of the SPLC and identify an area for program improvement (Table 4). Common positive themes were the informative exam review sessions and the availability and approachability of the peer mentors. Areas for improvement included increasing the number and depth of review sessions.

Table 4
Themes from Student Comments about the Learning Community

Theme (number of comments)	Representative Comments
Positive	
Informative exam review Sessions (20)	Final exam reviews for cardiology and endocrinology were very helpful
	I really enjoyed the Kahoot review sessions before the exam

	The Kahoots were fun and gave me a general idea of where I stood before an exam
Peer mentors were resourceful/accessible (15)	I enjoy the effort and wisdom shared by P3 mentors
	Mentors were very accessible
	Mentors are always available and willing to accommodate me during the week/weekends on zoom/in-person
Flexible timing of sessions (9)	Convenient office hours work well with our schedules
	Many options and opportunities offered at different times
	The virtual option is great and more accommodating
Peer mentors assisted with adjusting to pharmacy school (4)	The P3 mentors are very knowledgeable and help with issues we all face in pharmacy school
	I really enjoyed speaking with the mentors about my struggles in school and asking for advice
	A mentor taught me some tips as an upper-class student
Recommendations	
Additional/more in-depth review sessions (13)	More review sessions would be helpful
	Include patient counseling practice sessions
	Reviewing more material in-depth
Different office hour formats/times (7)	Online options
	Possibly offer alternative meeting times in the evening
	In-person option is preferred
Increase student awareness (3)	I would like to know more about how this works maybe offer a seminar.
	Make students more aware of help
	I feel like it does not get used enough

Reasons for not attending	
Not beneficial (25)	I didn't feel the need since I attended professor office hours
	I felt comfortable in my own abilities
	I preferred studying by myself or with my own friends
Timing/schedule conflicts(19)	I was busy with my schedule and adapting to P2 year
	Inconvenient time of sessions
	I have a job after school and didn't get the chance
Unaware/forgot to attend (8)	I am not sure what the learning community is
	I would forget to use this resource
	I don't know what resources are included in the learning community

Participation in the Learning Community

Approximately half of the P1/P2 respondents did not use the learning community. Reasons for not participating included preference for studying alone, studying with friends, or meeting with professors, and lack of time to attend learning community events (Table 4). Overall participation in the learning community increased from 2019 to 2023 despite a decline during the COVID-19 pandemic years. Students participated in more events each semester during 2022-2023 compared with 2019-2020 (Table 5).

Table 5
Student Pharmacist Learning Community Participation

	2019-2020	2020-2021	2021-2022	2022-2023
Participation of P1/P2 classes (%)	26.1	56.0	53.3	78.9
In-person	26.1	0	3.3	26.3
Virtual	0	56.0	36.7	26.3
In-person and virtual (hybrid)	0	0	13.3	26.3
Events attended per semester (M)	4.6	4.3	3.4	5.9

P1=first professional year; P2=second professional year, M=mean

Discussion

To our knowledge, this is the first report to include an examination of a change in delivery format (in-person and virtual) for a pharmacy student learning community within the context of ongoing program assessment. Overall student response to this peer-based learning community within a rigorous pharmacy program was consistently positive regardless of delivery mode. Students, on average, agreed that the learning community improved academic success and filled an academic need and that the relationships with P3 mentors enhanced student understanding of the curriculum. There was agreement throughout the four years that the learning community enhanced professional development and increased social interactions with peers. Student comments regarding the benefits of the learning community showed similar themes of exam preparation,

assistance with adjusting to the pharmacy program, and resourceful peer mentors. Our findings are similar to those of Varshney and Mason (2019) who reported that a peer-based learning structure received positive student feedback regarding course review and helpful mentors.

The lack of significant change in the student survey assessment data from 2019-2023, despite differences in delivery mode during that timeframe, suggests format did not have a noticeable impact. Disruptions in pre-pharmacy education and transition to remote learning in recent years have caused issues with student retention and progression in pharmacy programs (Darbishire et al., 2020). As student academic performance during the first year of the pharmacy program is critical to progression and on-time graduation, the role of learning communities in supporting student success requires increased exploration (Chisholm-Burns & Johnson, 2020; Spivey et al., 2021).

Our findings did indicate some changes in attendance based on delivery format, suggesting that flexibility in offering intentionally scheduled in-person and virtual events could increase accessibility for students and encourage more uptake of learning community resources. Self-reported attendance at SPLC events increased overall during the four years with students attending more SPLC events during a semester in 2022-2023 compared with 2019-2020. Attendance decreased during 2020-2021, likely reflecting the

transition to remote education during the COVID-19 pandemic isolation. In 2023, the majority of our learning community programming was offered in a hybrid format with intentional scheduling to provide flexibility for students with challenging home and work schedules. Virtual exam review sessions scheduled on weekends or during evenings are highly attended events. Program format during an Interprofessional Education (IPE) program for pharmacy and physician assistant students did not have a significant effect on overall student perception of learning (DelNero & Vyas, 2021). Students in the IPE virtual/hybrid program group perceived higher learning benefits (96%) compared with the in-person group (94%). Factors associated with preference for virtual format programs include a comfortable environment, schedule flexibility, and timing during the pandemic. As education has returned to primarily in-person delivery, the optimal role of virtual learning requires assessment.

Participation in our learning community is voluntary, although the learning community coordinators and peer mentors evaluate event attendance. Students currently document their attendance at SPLC events using Quick Response (QR) codes. At the end of each semester, the P1 and P2 students with the highest attendance participate in a raffle for small prizes. Given the number of students who did not take advantage of learning community offerings during 2019-2023, their reasons for this

choice bear further exploration. Some students have stated through the survey responses that they prefer to study alone or do not perceive that they require support. We continue to explore barriers to student attendance at SPLC sessions and events. Students may have differing priorities and time restraints (Fang et al., 2022). Those students with higher academic ability may persist and seek help from the learning community (Johnson et al., 2022). However, there may be a stigma surrounding the use of the learning community (Bornschlegl et al., 2020).

Free response comments on the annual SPLC surveys have informed our practices as we respond to student needs and work to make the learning community as accessible and beneficial as possible. Efforts to increase student engagement in the SPLC include peer mentor introductions by course coordinators during class sessions, expanded general messaging to P1/P2 students regarding learning community events, and mentor availability. The administration promotes the SPLC as a resource for optimizing success, encouraging students to participate proactively instead of waiting until they experience academic difficulty. Faculty advisors, education specialists, and course coordinators invite students to attend weekly study skills and metacognition sessions with peer mentors, and periodic exam reviews. Peer mentors engage students in discussions regarding professional and social development and mental health/wellness during weekly small group settings. Events

for leadership opportunities, residency, internships, and social interactions will engage students who may not require academic support. Second-year students interested in becoming a P3 mentor have opportunities to explore the role with current mentors.

Limitations of This Study

Limitations to the results include voluntary participation, low response rate, small, unbalanced samples, and possible responder bias. Student participation in the survey decreased in 2021-2022 and 2022-2023, possibly due to survey fatigue, as there were several surveys conducted by other groups during this period. The self-reported attendance at learning community events was not verified. We did not evaluate students' academic performance. Individual students may have interpreted the survey items differently. The Likert scale, despite widespread use for education program assessment, assumes the experiences assessed are linear (Carifo & Perla, 2008). Students may have had difficulty differentiating their responses within the 9-point scale compared with a 5-point scale (Medina et al., 2019). Students were not prevented from completing the survey twice.

Conclusion

A peer-led learning community can assist first and second year pharmacy students in adapting to a rigorous professional program in the post-pandemic environment providing academic,

professional, and social support, and delivery format can be leveraged to increase access. Student perception of our learning community's contribution to academic success, professional development, and social interactions did not change despite format changes during and after the COVID-19 pandemic isolation, and attendance increased overall from 2019 to 2023. Virtual programming can expand program flexibility for students, yet strategies to increase student engagement in the learning community are required. Ongoing assessment data will inform targeted improvements. The role of learning communities in student progression and success requires continued investigation.

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Appendix A

Student Pharmacist Learning Community Survey

1. What was your rank in the PharmD program in the Fall of 20XX?
    i. P1
    ii. P2
2. Did you use the Student Pharmacist Learning Community during Fall 20XX?
    i. Yes
    ii. No
3. If no, please list the reasons for not attending (free text response):
4. If yes, how many times did you attend a virtual/in-person office hour or get help from a mentor?
5. If you used the Learning Community, how did you attend?
    i. Hybrid (virtual and in-person sessions)
    ii. Virtual
    iii. In-person

Please select a response (1=strongly disagree, 2=disagree, 3=moderately disagree, 4=mildly disagree, 5=undecided, 6=mildly agree, 7=moderately agree, 8=agree, 9=strongly agree) to these statements about Learning Communities:

6. Learning Communities are beneficial in improving academic success of students in the program
7. Building relationships with P3 mentors through the Learning Community enhanced my understanding of expectations of the pharmacy curriculum
8. Learning Communities have a strong impact on the professional development of students in the pharmacy program
9. Learning Communities fulfill an academic need in the pharmacy program

10. Learning Communities allowed students to increase their social interaction with one another

Free text response:

11. What is one aspect of the Student Pharmacist Learning Community that works well for you?
12. What would you like to see changed about the Student Pharmacist Learning Community?

Peer Tutoring and the Identity of Belonging

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Abstract

A study was conducted considering a mathematics learning center as a figured world, that is, as a social space that is treated as if individuals within the space share certain meanings about the space and interactions within it (Holland et al., 1998) from the perspective of the undergraduate peer tutors employed in it (for the larger study, see Bjorkman, 2019). An emergent theme in the collected data was that of "the club" or a sense of group membership and identity that focused on tutors' mathematical abilities, helpfulness to others, being STEM majors, and the tutoring center. The focus of this article is on how tutoring, in this instance, showed benefits in the areas of positive subject-matter identities and a sense of belonging that has been shown as beneficial for student outcomes (Cribbs et al., 2015; Solomon, 2007). How undergraduate tutoring programs can potentially be leveraged as beneficial not only for the tutees – but also for the tutors – is discussed.

Peer Tutoring and the Identity of Belonging in Mathematics

The study of undergraduate mathematics peer tutoring is an emerging field within mathematics education (Byerley et al., 2023; Mills et al., 2017). Research to date has primarily focused on the efficacy of tutoring for those being tutored, or on analysis of the specific content of tutoring interactions (Grove & Croft, 2019; Sommers, 2015). Peer tutors are also, by definition, students of the institutions where they are employed as tutors. Therefore, it is worth considering if and how they might also benefit from a peer tutoring program. It is known that students being tutored benefit from working with peer tutors (Colver & Fry, 2016; Sommers, 2015), but are there also benefits to the tutors?

This paper reports on the identity work aligning peer tutors' identities toward STEM and mathematics (identity as defined within social interactions by Holland et al., 1998) that was reported as a benefit by undergraduate mathematics peer tutors involved in an ethnographic study of an undergraduate mathematics tutoring center as a figured world (Bjorkman, 2019; Holland et al., 1998). The larger study's research question was: What tutor identities are apparent from observation, self-report, and tutoring enactments? And the answer to that question was considered within the context of that mathematics tutoring center.

Literature Review

Student persistence in STEM majors has been described as a "leaky pipeline" or with other metaphors (Cannady et al., 2014). One key component of stopping the "leak" and persisting in a STEM major is a student's belief that they belong in their chosen field of study (Lewis, 2016; Solomon, 2007; Stewart, 2021; Walton & Cohen, 2011; Wilson et al., 2015). Belonging is a part of identity, the belief that one is a certain "kind of person," the enactment of that belief, and the acceptance of that enactment by others (Holland et al., 1998). The "relational" and "communal" layers of identity as enactments of that acceptance by others are key components to the development of a STEM identity, and a STEM identity is a key component in STEM persistence (Stewart, 2021). The theoretical framework used in this study was that of figured worlds (Holland et al., 1998). A figured world is a social space where individuals act as if there were shared understandings of roles, beliefs, identities, and actions. Figured worlds exist on multiple, overlapping scales. For this study, figured worlds that overlapped included levels as broad as what it means to be an undergraduate in the United States and as small as a particular tutoring interaction. The study focused on the figured world of the Mathematics Learning Center (MLC) and on the perspectives of the figured world of the undergraduate mathematics peer tutors (tutors) employed there – what they believed to be shared beliefs, values, identities, positionalities,

acceptable and unacceptable actions, and the meaning of actions within the MLC.

A key toward retention in a STEM major is students' affect toward mathematics – do they like it? The presence of a mathematics tutoring center has been found to have a positive impact on students' attitudes toward mathematics (D. Bressoud et al., 2015). Indeed, one of the seven characteristics of successful calculus programs is the provision of "[p]roactive student support services, including the fostering of student academic and social integration" which includes the "building of student-faculty community within the department" and "heavily utilized learning centers that attracted all students as places to gather, work on assignments, and get help as needed" (Bressoud & Rasmussen, 2015, pp. 144-145). Studies show that mathematics tutoring benefits students seeking tutoring (Colver & Fry, 2016; Topping, 1996) but fewer studies have considered the benefits to the tutors (Colvin, 2007; Sommers, 2015).

Many studies have looked at ways to increase STEM persistence (van den Hurk et al., 2019) and some have focused specifically on the use of peer role models to combat stereotype threat and increase at-risk students' sense of belonging (Ko et al., 2020; D. M. Marx & Ko, 2012; D. M. Marx & Roman, 2002). The studies to date have largely focused on the impacts of these interventions on the individual exposed to the peer role model.

For example, Marx and Ko (2012) found that the mitigation of stereotype threat's impacts on mathematical performance increased as the similarity of the student to the role model in areas such as school affiliation, life experiences, and shared interests increased. Peer tutors attending the same school, in the same program of study, and with other similarities to students can potentially provide similar benefits. However, the focus of these studies remains on the students interacting with the peer role model and does not consider the possible impacts on the role model.

One recently published study considered the experiences of undergraduate academic peer coaches (Dufault, 2023) and the benefits they experienced participating in the program. Participants in that study described benefits to their own learning and professional development through the experiences of coaching students and collaborating with other peer coaches (Dufault, 2023). The Dufault (2023) study did not emphasize the impact of relationships formed via serving as a peer coach. However, participants did talk about the "social component of it [the peer coaching program]" and the "trust" that was built between peer coaches (p. 39). Similarly, the study of a mathematics tutoring center as a figured world from the perspective of the tutors employed within it found that social components and social belonging were important to the tutors and served to support their own mathematical identities (Bjorkman, 2019).

Methods

Data was collected from undergraduate mathematics peer tutors (henceforth just called tutors) at a large, public university's Mathematics Learning Center (MLC) over the course of a single semester. The university is a Hispanic-serving institution whose 35,000 students include 52% students of color. There are 9000 undergraduates in the College of Engineering and the College of Sciences. In the years immediately prior to data collection the Mathematics and Statistics Department began a series of reforms aimed at improving student outcomes in the calculus sequence including increased emphasis on inquiry-oriented pedagogy and increased training of graduate teaching assistants as well as expansion of the Mathematics Learning Center. The MLC studied was housed within the library on campus and consisted of a front desk where students were asked to sign in and out, tables labeled with the courses most often tutored (Precalculus through Calculus II) to facilitate students working together, and several unlabeled tables off to the side of the front desk where tutors and upper-division STEM students tended to congregate.

The data collected from the tutors for this study included field notes of naturalistic observations (Emerson et al., 1995), a survey distributed to tutors, and four case studies of tutors who completed the survey and indicated openness to participating in further research. Each case study consisted of video recording

the participating tutor as they went about their normal tutoring duties, then having the tutor go to a private space shortly after their shift ended and watch key episodes of their tutoring while providing an oral narrative of their thoughts, feelings, and motivations in the moment as a stimulated recall (Dempsey, 2010; El Chidiac, 2017; Lyle, 2010; Muir, 2010). Key episodes were chosen by the participants with the researcher asking about specific additional episodes as time allowed. Each case study participant also completed a final interview after the conclusion of the observations and stimulated recall sessions (Ginsburg, 1997; Lasky, 2005). The demographics of the four case study participants are reported in Table 1.

Table 1
Case study participants' demographic information.

Case Study Participants*	Year	Major	Ethnicity	Time Tutoring in the MLC
Danielle	Junior	Mathematics	White/Caucasian	1-2 years
Eric	Senior	Mathematics	Chinese-Filipino	1-2 years
Jake	Sophomore	Engineering	White/Caucasian	<1 year
Lily	Junior	Mathematics & Physics	Cambodian	1-2 years

**Gender-preserving pseudonyms chosen by the participants*

Grounded theory informed by discourse analysis (Corbin & Strauss, 1990; Matusov, 2007; Strauss & Corbin, 1994) was utilized during data analysis to allow themes to emerge without the imposition of a priori coding categorization. A narrative summary

of all recorded interactions was produced from rewatching the recordings and field notes taken during observations, and all interviews were transcribed. Stimulated recall interview transcripts were then collated with these notes into a single file for each observation and stimulated recall so that the tutor's discussion of an incident was analyzed with a description of the incident. Emerging themes were triangulated between different data sources and participants to see if there was sufficient evidence that the theme was a consistent feature of the figured world from the tutors' perspectives.

Significant themes that emerged during analysis included a description of social groupings within the MLC, relationships to the physical space and artifacts within the space such as whiteboards and the queue system for organizing student requests for help, the identities of peer tutors as "almost peers" in contrast to other resources for students, and their goals for tutoring interactions including student understanding of mathematical content as well as students' increase in self-efficacy and a positive view of mathematics. In this paper, I will address a particular identified social group within the MLC and tutors' self-report of its impact into their mathematical identities. For a discussion of the broader findings see Bjorkman (2019).

Results

An emerging theme during data analysis was the social importance of the MLC to the tutors. The tutors repeatedly used the term "the club" and, when asked, defined it to be a group of upper-division STEM students, many but not all of them working as tutors in the MLC, that were consistently present in the MLC. The physical layout of the tutoring center had sufficient space that one corner became a sort of clubhouse where "the club" would congregate, work on homework, eat snacks or lunch, socialize, and plan social events that took place outside the MLC. Since the focus of the broader study included an emphasis on tutor self-perception and self-reported identities, the theme of social groups was further explored to consider what groups the tutors considered themselves to be a part of. To accomplish this goal, the use of plural, first-person pronouns was analyzed in every stimulated recall transcription. This included a total of 393 uses of "we," "us," "our," or related contractions ("we'll", etc.). Of these, 31 (8%) uses were determined to be ambiguous or not inclusive of the speaker and were excluded from further analysis. A majority of the time (322 times or 81%) the pronouns were used to describe individuals directly involved in the interaction being observed. Two-thirds of the time (218 out of 322) the use of the pronoun referred specifically to the undergraduate peer tutors as a group. When the group referred to by the plural pronoun was broader than the particular

interaction, it referred to the tutoring center generically ("if we're really busy") 80% of the time (40 out of 50) but the remaining 20% of the time (10 out of 50 including utterances by all four participants) referred to a group the tutors called "the club" which included all but one of the employed tutors as well as many non-tutor upper-division STEM students. This analysis indicated strong identification by the tutors with their role as tutors, with the MLC as an organization, and with that specific group of students called "the club."

The verbiage of "club" may conjure up an idea of something exclusionary or at least exclusive, but the actions and descriptions of the club were more aligned with a club that recruits and enculturates rather than one that shuns and excludes. The club functioned as an affinity group (Gee, 2000) formed by shared interests in mathematics/STEM and perpetuated by common practices of hanging out together and helping others with mathematics/STEM questions and homework. The group was key in Lily being hired as a tutor, as she described in her final interview:

> ***Lily:*** I **come here to the MLC, I'm hanging out** with [Student 1] who used to work here and [Student 2] and we would do homework… [Student 1] was talking about how they still need tutors, he **literally takes me in my chair and pushes me in** to [Director of the MLC's office] and says, "Hire her."

For Lily, entering the formally recognized role as a tutor followed the informal recognition of being in the club. It was recognition by members of that group that she was capable to be a tutor that led to her application. It was also normalized that that group of students would help others, Jake described the group in his final interview as,

> ***Jake:*** So, you have, one group that's your **regular, upper division math students** who all are working together on their classes. And **they're always just hanging out in here**. And **they'll help people, too**, if people have questions they will intervene even if they're not on.

In his initial survey, he described the norm that this group would jump in to help others,

> ***Jake in response to the prompt: The tutoring center is really busy today, with far more students than tutors. Everyone wants help and they want it now. What do you do? Why?:*** If there are tutors in the center that are not on shift who are able to spare some of their time, **I will ask them to log in as a tutor to help** with the tutoring during that time.

It was also observed that non-tutor members of this group would help others. During an observation of one of Lily's shifts, a student entered asking for help with a course that none of the tutors on duty felt that they could assist with. A non-tutor member of the club overheard the student asking and volunteered to help since they had already completed the course. Lily reflected on that interaction during her following stimulated recall as being typical of that group where everyone would help one anyone with a mathematics question whether they were clocked in or even a tutor at all.

During data analysis the tutors all indicated strong identification with "The MLC" and with "The Club." Danielle's story of becoming a tutor was similar to that of Lily. As she shared in her final interview,

> ***Danielle:*** I became a tutor because **I was a student here all the time** and I was coming in constantly… because I needed help with Calc II…. I just started showing up… I started **seeing kids that were around my age like being tutors** and so I would ask friends… I'd ask [tutor] how did you become a tutor here? And he'd say like, "Oh, I don't know I just volunteered to tutor here, and **I was here all the time and I wanted the job** and I just asked [the MLC Director]." and I was like "OK." … So that's how I started working here.

In other interviews, Danielle shared how she had taken on a tutor-like role helping others with their mathematics questions in addition to getting help for herself before applying for the formal position of a tutor and how the MLC had become socially important to her and her sense of belonging in her major,

> ***Danielle:*** It's [the MLC] a nice place to be for math students… **we're here all the time**, and there are whiteboards and things like that…It's kind of fun when it closes at the end of the day. We close down, and then **people will stay and study and stuff**. [Tutor] and I have done that a few times. Then it's really cool. **I feel really included, like it's this little club.** Because we're like "We get to stay after hours." *(from a stimulated recall)*

Jake described how becoming a tutor gave him access to the MLC and the club in a new way, rather than the club being a gateway to becoming a tutor, becoming a tutor became his gateway to social inclusion and a sense of belonging. It is worth noting that Jake was the only sophomore case study and had less time and fewer advanced classes at that point to allow for enculturation into a strong mathematically identified affinity group like the club.

> ***Jake:*** [The MLC] gives you a place to **socialize with people** that are also struggling through the same stuff. First semester, I wasn't a tutor I found it **pretty hard to make friends** in engineering. And you know, I didn't really know anyone who was struggling with me so **I kind of felt isolated and alone**. But once I started working here, **and coming here a lot,** I was like, oh, all these people are in the same exact boat as me, and then **you make good friends through that**. It's a place with a lot of nerds who are struggling just as much as you are… You meet good people. It's a great work environment, a lot of intelligent people which helps you want to be smarter I know that's a big thing **I like being here**.

Regardless of how they came to it, the tutors all described the MLC and the club as being central to their social life and/or identity. As Eric shared,

> ***Researcher:*** So, this place has become more than, more than a job to most tutors?
>
> ***Eric:*** We usually **also live here**, also, yeah…yup it is the place to be **not just for work** but for work not like work but homework and things to do that are mathish.

> ***R:*** It's the nerd clubhouse?
>
> ***E:*** Pretty much, yeah. *(from the final interview)*
>
> …
>
> ***Eric:*** …a lot of the time we come here. **We basically live here**. So, whether we're on duty or off duty, we're comfortable enough that where **we can just ask questions and people are like, "Yeah, sure I can help you."** … it's kind of the whole learning environment philosophy. *(from a stimulated recall)*

For the tutors in this study, it is clear from the data collected that being a tutor was about more than an on-campus job – more than something to put on their resume or provide a paycheck. Their formal role as a tutor dovetailed with membership in an informal affinity group that strengthened their self-perception as people who were capable of doing mathematics and of helping others struggling with mathematics. This group became self-perpetuating through recruitment of non-tutors into tutor-like roles and formal tutor positions and recruitment of tutors and non-tutor students to "hang out" and "really feel included" in a mathematical community.

Discussion

Past studies have considered the role of the formation of mathematical identity and a sense of belonging to STEM persistence and academic outcomes in mathematics (Estrada-Hollenbeck et al., 2011; Lewis, 2016) and many have looked at the role of tutors and

peer role models on the students that are helped (Eschenbach et al., 2014; D. M. Marx & Ko, 2012; D. M. Marx & Roman, 2002; J. Marx et al., 2016). Some studies have additionally looked beyond the tutoring interaction specifically and to the broader impact of the presence and milieu of a tutoring center on the formation of mathematical identities (Cunningham, 2013; Solomon et al., 2010). This study has sought to look at these benefits from the perspective of the peer tutor rather than the student being tutored.

An emergent theme from the data collected was the importance of the MLC to the tutors as more than a job but as a key part of their social life and mathematical identity. The narratives, particularly of Danielle and Jake, showed the power of a tutoring position to shift self-perception from being outside of a particular group to within it – to be recognized as the kind of person who is good at mathematics and good at helping others with mathematics. Forming a strong mathematics identity in this way has been shown to lead to better student outcomes.

Conclusion

The primary goal when making hiring decisions for peer tutors has, rightly, been focused on the benefit to students who will be tutored by them. Similarly, the physical layout and policies of tutoring centers emphasize their role as spaces where non-tutor students get helped by tutors. These results open up

the possibility, however, of recruitment to formal roles for students who may be at risk of leaving STEM due to stereotype threat or other factors bolstering mathematical identity and increasing the likelihood of retention in a STEM major (Carlone & Johnson, 2007; Cribbs et al., 2015). It also emphasizes the role of a tutoring center as something more than a space to get specific academic questions answered, but as a social space in its own right that can potentially support or hinder the formation of affinity groups and the strengthening of positive student identities. Those making policy and managerial decisions for these types of spaces should consider all those who will potentially benefit from the space and how to maximize the possible positive benefits for students and tutors alike.

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Collaboration between Learning Centers and Campus Support Services Encourages Degree Attainment Post-COVID

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Abstract

College campuses are responsible for coordinating support services to keep students on the success track. Student issues often inhibit or obstruct progress toward a degree. The impact of COVID-19 has affected student trajectory and persistence toward a college degree, and students are feeling this impact. Two surveys conducted of students at four-year universities show common issues. A strategy of collaboration between learning support centers and campus services can make significant contributions toward addressing and removing student obstacles. This article explores student struggles revealed in recent surveys. It also looks at a TRiO program and how its strategies can help to develop collaboration between campus support services and community connections to help alleviate student issues and encourage persistence to a degree.

Keywords: TRiO, COVID-19, student success

Collaboration Between Learning Centers and Campus Support Services Encourages Degree Attainment Post-COVID

College campuses have a varied responsibility to their learning communities that require conscientious efforts to coordinate support services that will keep students on a success track to their degrees. Simply making students aware of resources on campus is often not sufficient to support their pathway toward a college degree. However, applying these resources can help students connect the dots to secure the support needed for them and discover the solutions they require to circumvent obstacles that block persistence to their degree (Somers, Woodhouse, Cofer, 2004; Kosin, Sumida, Henriques, Salavanti, Yoder, Walline, Hurley, 2022). Learning support centers can be a first step. To help students navigate services in their learning communities, it is important that all support services have effective communication ties, understand what each other has to offer, and work in concert. That understanding leads to solving problems efficiently.

In 2021, and more recently in 2022, four-year universities investigated the impact of COVID-19 on insecurities for college students and its ongoing impact on students (Hope Center, 2021; University of Memphis, 2022). Typically, most colleges and universities have infrastructures of service supplying necessary support that is responsive to student needs. Facilitating coordinated services offers the best chance of success in helping students resolve

challenges imposed from COVID and other issues which encourages persistence to complete their degrees (Mannix, Neale, 2005; Ascione, 2019). Learning support centers are usually known to students and used campus wide. The centers might serve to catalyze collaboration between a broad cross section of support services on campus and within the community-at-large thereby helping students solve problems that inhibit successful completion of courses.

As in business, collaboration between departments helps them define common goals and achieve successes. A business develops a common language, through which departments understand functions of relevant groups, set the tone for consistent communication, help complete projects on time, and supply feedback and thus promote success (Mannix & Neale, 2005; Edmondson, A. ,2019; Hunt, 2021; Perry, 2023). Similarly, learning centers should have a clear understanding of various student service departments and use them to help students solve important problems or issues brought to mentor/advisor/coach attention (Adamucci, 2016; Hunt, 2021; Wiatr, J., 2021 and 2023). Moreover, combining insights of services can influence whether students marginally pass or close in on successfully reaching their goals (Somers, 2004; Mannix, 2005; Kosin, 2022).

Staff members of assorted services across campus would do well to build a diversity of contacts of professionals that they have

referred to or have worked with to help students resolve issues they are facing. Learning centers must be open to working with on-campus resources as well as community-at-large options that will address a student's overall well-being (Wiatr, J., 2021, 2023; Wilhelm, Kinziee, Sanders, Mfume, 2023). Additionally, awareness of community-at-large resources and contacts is needed by campus support personnel and may already be in place through offices on campus. These connections help address student issues so students can continue to pursue their degree, (Longwell-Grice & Longwell-Grice, 2008; Weber, Rankin, & Malewski, 2022). To get a better sense of the issues students face regarding the impact of COVID-19, surveys were done on college campuses. The purpose of this article is to examine selected results of two recent 4-year university surveys, to understand what they show, and then use them to redirect students from the problems identified to engaging in pursuing their degrees.

One hundred and thirty two-year colleges and seventy-two 4-year colleges and universities, including the University of Memphis, were part of a national survey entitled *#RealCollege2021: Basic Needs Insecurity During the Ongoing Pandemic*, which was conducted to help clarify the recovery issues for students returning to campus after the COVID-19 pandemic. More than 195,000 students responded to the survey. The percentages reflected in Table 1 highlight selected insights provided by that survey of post-

secondary programs. According to the study, about half of the responding students experienced at least one form of basic needs insecurity. Twenty-nine percent reported food insecurity, and 48% found housing insecurity or homelessness in the previous year. Forty-one percent had a family member who was sick with COVID-19 (13% reported that a family member or close friend died of COVID-19), and there were those ill with COVID-19 themselves. Not surprisingly, students who were surveyed exhibited moderate anxiety (37%) or depression (35%) and were at a loss coping with the situation(s) they faced.

Table 1
Issues Identified from Hope Center Survey

Analysis of Selected Issues from the Hope Survey	**Percentage (%)**
Food Insecurity	29
Housing Insecurity	48
Personally sick or family sick with COVID	41[a]
Anxiety/Depression	77/35[b]
Problems Concentrating in Class	80
Loss/Reduction in Employment	31/23
Unaware of Emergency Aid	52
Application for Ai Stressful	71
Internet/computer Access Problems	39

[a/] 13% reported that a family member or close friend died of COVID.
[b/] depression was indicated at least mild or moderate

These are selected results from the analysis of 195,000 plus student responses for the Basic Needs Insecurities of Undergraduate Students Post-COVID-19 *#RealCollege2021: Basic Needs Insecurity During the Ongoing Pandemic*, conducted of two—and four-year post-secondary programs to help clarify the recovery issues for students returning to campus post-COVID-19 pandemic. Percentages reflect select findings for post-secondary programs.

Approximately 52% of the students experiencing basic needs insecurity had not heard of emergency aid programs on campus. Consequently, they did not apply for campus support. Of students who did apply for support, 71% found the process stressful. A high percentage of students had problems concentrating in classes (80%), while others had problems with the internet or computer access (39%). Moreover, students experienced employment loss (31%) or reduced work hours (23%). Students are still feeling the impact of the identified pandemic issues (Hope Center, 2021; University of Memphis, 2022; Wilhelm, 2023).

Although the University of Memphis was part of the Hope survey, researchers at the University conducted a follow-up survey on the impact of COVID-19 on students at University (University of Memphis, 2022). Three hundred and ten students completed the survey. Selected results of that survey are reflected in Table 2. The survey revealed ongoing concerns like those shown in the Hope, Real College survey. Students expressed a need for access to resources to address food insecurity (26%) and housing insecurity (16%). On average 59% of students surveyed were concerned with serious financial problems (*i.e.,* tuition, technology, internet, transportation, etc.). Ninety-two percent desired more financial stability.

Table 2
Issues Identified from University of Memphis Survey

Analysis of Selected Needs/Concerns from University Survey	**Percentage (%)**
Access to food insecurity resources	26
Access to housing insecurity resources	16
Student health support	23
Mental health services	39
Caring for family members/ Parenting Support	65/3[a]
Financial aid (tuition, technology, internet, transportation etc.)	59
Financial stability	92
More focus in classes	92
Sense of belonging	74

[a/] 3% of the students surveyed expressed a need for parenting support for their children.

Analysis of University Survey (2022) – Impact of COVID-19 on Students carried out as a follow-up to the Real College Survey (2021) (Table 1) reflecting the responses of 310 students. This survey was conducted to help determine similar ongoing issues for students at the University.

Other significant findings indicated that resources were also needed by students surveyed for support to care for family members (65%) including 3% identifying need for parenting support for their children. These were issues which involved community-at-large resources. Twenty-three percent of students also found the need for health support and 39% felt a need for mental health support. Eighty-eight percent wanted to better manage anxiety while 92% would like to be more focused in class. Seventy-four percent wanted to feel more connected to the University. One campus support service cannot be expected to

address the array of problems students have identified. We need to ask ourselves: How could we better support our students moving forward? A recent online panel presentation with panelists from Indiana University School of Education, California State University, and Johns Hopkins University discussed what college campuses must do to support student success (Wilhelm, 2023). The discussion supported the need for strong interdepartmental communication. One program at University of Memphis that engages in interdepartmental collaboration is the TRiO office.

TRiO/SSP (Student Success Program) is a service that offers support to first generation, low income, and/or students with disabilities. TRiO/SSP is a cohort program that is divided into STEM (Science, Technology, Engineering, and Mathematics) and Classic majors, (those that are not considered STEM oriented). Although these cohorts have similar general educational goals, each discipline interacts with the other through educational workshops, scheduled social events, peer mentoring, and leadership programs as well as other opportunities part of TRiO. TRiO's mission at University of Memphis addresses research that identifies creating pathways for students to connect to each other, the learning community, and develop networking. This establishes a sense of community, a student voice, and responsivity sought by students (Longwell-Grice & Longwell-Grice, 2008; Pell Institute, 2009; Bennett, 2021). Students

are assisted to use services of the University with the guidance of their SSP Specialist.

Commonly used services provided by TRiO are shown in the Departmental column of Table 3. Part of the focus of SSP is connecting students with academic resources (*i.e.*, tutoring, SI), skills building (*e.g.*, time management, organizational skills), leadership and financial literacy opportunities. Additionally, SSP provides mentoring, and therefore, a chance to connect directly to the university and its resources (Pell, 2009; Bennett, Hsiao, Dees, Kim, & Bochenko, 2021). In an effort not to duplicate services, SSP specialists cooperate directly with services like the Educational Success Program (tutoring), Disability Resources for Students, Advising, Financial Aid Office, Registrar, Counseling, and other departments listed in the Campus Wide Resource column of Table 3. SSP students are assigned their own Retention Specialist and that gives them an opportunity to build a person-to-person connection to the University. This in-person connection is something appreciated by students in learning support centers (University of Memphis, 2022).

Table 3

Resources Used at University of Memphis to Address Undergraduate Issues

STUDENT NEEDS	CAMPUS-WIDE RESOURCE	DEPARTMENTAL
Tutoring	-Educational Support Program (ESP)	-SSP Subject Area Peer Study Group

	-Departmental Peer Tutoring	
Skills Building	-Writing Center -Library Resources -Career Services -Disability Services	-SSP Retention Specialist -SSP Peer Mentor -SSP Workshops
Leadership Opportunities	-Student Organizations -Community Volunteerism -Study Abroad -Tiger Link (employment)	-SSP Advisory Board -SSP Peer Mentor Program -SSP Study Abroad
Financial Literacy	-Campus Workshops -Student Organization Workshops	-SSP Online Workshops -SSP Guest Speaker Series
Financial Aid	-Financial Aid Office -Tiger Scholarship Manager -Finish Line	-SSP Grant Aid (limited) -Campus Card (SSP funded) -Book Scholarship
Housing	-Campus Housing -Campus Housing Referral to Community	
Mentor/Advisor	-Advising -Counseling -Career Services	-SSP Individual Meetings -SSP Small Group Meetings -SSP Summer Bridge

List of examples of resources commonly used at the University to address undergraduate support needs on campus that reflect campus wide services and those offered through the TRiO/SSP department.

In the TRiO program students often turn to their SSP specialist as the starting point to resolve their academic problems and other issues needing continued support. Cohort members are required to meet with their individual specialist multiple times during the semester. The specialist and student have opportunities for a consistent exchange of ideas and an inroad for the specialist to provide guidance and feedback for motivation to the students. The active communication SSP Retention Specialists have within their program and the various resources on campus facilitates action on problems students identify to them that can otherwise derail momentum toward reaching a degree.

Students in the Trio/SSP cohort(s) at the University of Memphis came forward to their retention specialists with the very problems found by the survey (Table 2). Struggles with on-line classes, followed by transitioning back to the classroom, needs for employment, food insecurity, anxiety, depression, and finding financial aid to support their ongoing struggles to secure tuition were identified by cohort members. This was especially true for Seniors in the cohort(s) when they were trying to secure financial aid during the final semester(s) (Table 4). When seven specialists of the SSP staff reached out to each other and their contacts in tutoring, career services, counseling, advising, and financial aid as well as other specific departments who directly assisted students with

issues of concern, they helped place students on a track to solve their problems.

Table 4
Resources Used by TRiO Specialists to Address Mentee Issues

NEED IDENTIFIED TO SPECIALIST	TRiO/SSP	CAMPUS/COMMUNITY-AT-LARGE
Tutoring	-SSP Subject Area Peer Study Grp	-Educational Support Program ESP -Departmental Peer Tutoring -Faculty/Instructor Office Hours
Skills Building	-SSP Retention Specialist -SSP Workshops -SSP Guest Speakers Series	-Educational Support Program (ESP) -Writing Center -Library Resources -Disability Services
Employment Opportunities	-SSP Student Positions (limited)	-Tiger Link (employment on campus and community-at-large)
Food Resources	NA	-Campus Food Pantry -Community Food Pantries
Housing	NA	-Campus Housing -Referral to community resources
Financial Aid	- SSP Grant Aid (limited)	- Financial Aid Offices -Tiger Scholarship Manager -Finish Line
Mental Health	-SSP Individual Meetings -SSP Small Group Meetings	-University Counseling Center -Community-at-large Mental Health Resources

(NA – not applicable to the TRiO charter)

List of examples of needs that were identified by cohort members to their Specialist and routes of resolution offered by SSP Retention Specialists via departmental (SSP)services, services offered on campus, and/or community resources available.

Cohort students were connected to counseling and mental health support available on campus and within the community-at-large. Housing insecurities named by students were referred to campus housing who could also make connections to community resources. Food insecurity experienced by students was addressed through both campus and community food pantries. Financial aid connected students with scholarship, grant, and loan options. Students close to graduation but out of money were referred to special programs designed to help Seniors find the funding needed to secure their degrees (Table 4). Assistance with problems all started with visits with their Retention Specialists who were able to help students sort out and prioritize their needs and connect with specific services that could be of help. Connecting students with services beyond those offer in-house has become part of the solution set for TRiO/SSP.

Problems were identified by students to their specialists who in turn were able to direct students to services that helped resolve issues shown in the surveys (Tables 1 & 2). For students who often had fragmented plans or no plan at all, specialists helped students define problems and connect with services that allowed them to develop a focused plan of action which then allowed them to focus on the target of obtaining a degree. This in turn empowered students to concentrate on current classes, supporting continued progress toward passing courses needed for their degree programs. Developing a personal connection with students needing

redirection and linking them with resources in support offices around the campus and community has proven effective (Habley, 2005; Kosin, Sumida, Henriques, Sallavanti, Yoder, Walline, Hurley,2022). Understanding the needs of our students go beyond tutorial assistance (Wiatr, 2023) and will supply a framework those of us in learning support need to build as we direct students toward services that can resolve issues.

Although TRiO is effective in supporting resolution of student issues not all students qualify for TRiO and some universities do not offer TRiO programs; however universities do have learning support centers and personnel of these centers can establish interdepartmental connections. How can connections between services on campus be initiated by a department? Consensus among members of a learning support center that serve as initiators of solutions can be a first step. Start within your own department by sharing and developing a directory of resources that members of the department/program have used and secured. Establishing a Go-To directory can be further explored and expanded (*e.g.*, connections with tutoring, disability resources, advising, etc.) with use. Meeting with other offices/departments on Zoom, Microsoft Teams, and live phone calls and visits have proven most effective and minimize e-mails, and avoid text messages (Mannix, 2005; Adamucci, 2016; Hunt, 2021; Perry, 2023). Reach out to services you are likely to partner with, asking them to do a presentation for your department

to explain their services (Edmondson, 2019). This also allows you the opportunity to express the needs of your students to them. Open, active lines of communication establish pathways to problem resolution for students. Introduce your department to other services on campus that may not be informed of the nature or extent of support you provide students. Offer to do a presentation, thereby contributing to professional development, which is of concern to every department (Edmondson, 2019). Connections on campus have multiple benefits. As service providers whose mission is to support and facilitate the perseverance of our students, it is important that we convey our insights into the struggles our students face in and beyond the classroom (Mannix, 2005; Kosin, 2022; Wiatr, 2023).

We must remain aware of student circumstances that cannot be addressed only with tutoring, skills building, or even financial aid (Longwell-Grice, 2008; Ascione, 2019, Kafka, 2022; Wilhelm, 2023). We may need to make it part of our mission to provide guidance and connection to resources that address basic needs (i.e., housing, food resources, physical and mental health) (Wiatr, 2021; Wilhelm, 2023). Furthermore, all departments on University campuses have ties to the community at large and can connect students with resources outside the college learning community. Discovering and using the services of the community at large might offer our students another necessary connection. Reaching out from a variety of services supplies more talents that make problem resolution

more likely for a student's individual issues (Table 4). That means a better chance of problem resolution is achieved for students (Table 4). Services on campus must do more than cooperate with each other but engage with each other to establish the communication necessary to help students solve problems (Somers, 2004; Edmondson, 2019; Kosin, 2022; Weber, 2022).

Learning centers are a major tool for student retention for most colleges/universities. The connections with students established through mentorships, tutoring, counseling, and advising offered in learning center environments can be a critical component of persistence for our students. If services on campus capitalize on the benefits of working together, we will be more successful in delivering meaningful student support and keeping our students on track to graduate. With our pool of knowledge and diverse perspectives, we can tackle and solve complex problems showing we are stronger together while facilitating student persistence toward their college degree.

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Idea Exchange: Students Perceived Benefits of Embedded Online Peer Tutors

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Editor Note

This submission builds on the previously published TLAR article: Mendoza, D. F., and Kerl, E. (2021). Student Perceived Benefits of Embedded Online Peer Tutors. *The Learning Assistance Review*. 26(1), 53-73.

Dayra Fallad Mendoza and Elizabeth Kerl's article, "Student Perceived Benefits of Embedded Online Peer Tutors," from the Spring 2021 issue, presents findings from a two-semester study of an embedded tutor program that took place during the COVID-19 crisis as the world went remote. The study aimed to determine whether students enrolled in various courses felt they benefited from having a peer tutor embedded in their online courses and, if so, what the students felt those benefits were. Overall, Mendoza and Kerl found that students perceived benefits from having a trained and active embedded tutor in their online classes. Students reported feeling their coursework improved, more confident, and more engaging in their courses. As a full-time professional writing tutor in a tutoring center, I was reminded of my center's attempts at

embedding tutors virtually to provide additional support over the years and our most recent attempts at embedding tutors virtually. Unfortunately, these attempts were underdeveloped and rushed alongside a move to D2L Brightspace, our new LMS. Further discussion requires more context. As such, this response is primarily a brief narrative of the College of the Mainland's embedded tutoring program as online support became required.

The Tutoring Center had an embedded tutor program for many years, assigning tutors to the co-requisite Integrated Reading and Writing (IRW) courses that accompany Composition 1. Embedded tutoring and co-req were only offered to face-to-face courses, so the tutors would attend the Comp course and the IRW course that immediately followed. Tutors would sit in each course day, providing a familiar face to students they could seek support. Tutors, whether embedded or not, are trained to build rapport with students, and part of the training includes keeping information confidential; if a student vents about their frustrations with assignments or instructors, the tutor is there to support them and only to bring student concerns to the instructor when they see a pattern. They do so without reference to any particular student. Because the tutor had no role in grading and was available outside the classroom in the Tutoring Center, the tutor was effectively detached from the obvious power structure of a classroom.

This program had to be adjusted for the COVID-19 quarantine in 2020. Embedded tutors would participate in synchronous courses via Microsoft Teams throughout quarantine, with a partial return to face to face in Fall 2021. The Spring 2022 semester was our institution's first "full return" from the COVID-19 quarantine. This was also the last semester the Tutoring Center would offer embedded tutors. Based on nearly a decade of data collected for this program, no correlation was found between student grades and embedded-tutor presence, regardless of modality.

Data aside, we had received administrative pushback throughout the program's life. In our last fully embedded semester, we supported six sections of Composition-IRW pairings, with roughly 20 students each, totaling about 120 students receiving the support. However, as not every Composition student was an IRW student, the IRW numbers were far less, with roughly ten students (maximum) per course. Since the embedded tutors attended both sessions, they were out of the Center for 3 hours on class days. As one upper administrator noted, "We built the Tutoring Center. We expect tutors to be in it." With low usage and no apparent impact on student grades, we terminated the program to divert those tutoring hours back into the center.

However, in Fall 2022, many faculty members who utilized their embedded tutors still requested tutor presence in their IRW courses throughout the next semester. We attempted to provide support for

those courses, but with administrative pushback, we could not support them to the same extent. Part of this was due to limited staff; we only had five professional tutors and needed to maintain staff levels in the Center where there is far more student utilization. As such, we assigned tutors to attend two class periods a month during in-class writing days for major assignments. Given this limited attendance, the professors requested those two days be reserved for their IRW courses. Additionally, tutors were added to the D2L Brightspace courses to have access to the discussion boards and assignments. Initially, tutor presence on D2L was meant to be our primary point of intervention, always available for students to reach out to. This, however, amounted to placing tutors in classrooms but tacking them on to D2L rosters. It's easy to see how this attempt led to what Mendoza and Kerl call out as "simply placing a tutor into a course," which is obviously "not enough" (56). What's more, some professors never responded to their assigned tutors who reached out to discuss how they'd like the tutors to proceed in the online portion of the courses. Those who did respond were naturally more focused on days for tutors to attend the physical classes while quite a few did not use their LMS shells beyond hosting course material. As such, our D2L presence floundered as neither students nor instructors engaged with our tutors.

Aside from the obvious poor planning and negotiation of how this program could come back from the brink of death, several other variables came into play. Although courses moved to Teams during COVID, most faculty ignored the software when moving back to f2f. This isn't to say the option wasn't available, but the courses lacked the infrastructure for our tutors to create a living presence. Fall 2022 was also the first semester using D2L, moving on from Blackboard. This move was also fairly rushed, with many faculty setting their course shells up with the bare minimum and no plans to utilize the various features to promote online student engagement. Tutors were instructed to create open discussion threads where students could engage with tutors and ask questions. However, students never opened these threads. Additionally, leading into that semester, two writing tutors moved on in their careers out of an already limited staff, leaving five of us to support the whole college body while scavenging for spare time to provide our embedded support. Even one of our center's proudest moments worked against our embedded support. After years of being in a small classroom in an old building, we were moved into a new building in a space designed specifically for our center and computer lab. It is a beautiful, welcoming space for academic work that we are all grateful for; however, it quickly became apparent how these factors would increase foot traffic. To put this into perspective, before the move, we had 2,355 center sign-ins for Spring 2022 compared to

4,598 sign-ins for Fall 2022 in our new space. Given the admin perception of embedded tutoring and this vast increase in center visits, we saw it fit to put a definite end to the program.

This is not meant to excuse any of our shortcomings. Rather, it's meant to exemplify the precarious position institutions face, specifically their learning-support services. Despite COVID pushing the world online, not everything can stay online, and there is still pushback, whether intentional or not, to accommodating learners online. Each institution has taken its own steps out of quarantine—some adjusting to the new normal and others trying to find their way back to the old. Despite the time that has passed since quarantine and full returns, there is still so much more institutions, faculty, and staff have to do to better support students. In our case, many of the adjustments COM made for online learning during quarantine did not stick, so we find ourselves yet again seeking how to best our learners without the urgency of a worldwide disaster supporting innovation. There are more changes on the horizon for us at COM, and one of those is bringing back our embedded tutoring in a capacity closer to what it was before. As we are also moving to an 8-week model in Fall 2024, there is no denying that rigorous online components will be crucial in the near future, and our center and tutors will have to adapt accordingly.

Mendoza and Kerl have shown that students can appreciate and benefit from an online, embedded tutor program. Context is key,

however, and what worked for one institution might not work for another. Unfortunately, the authors leave out specifics of what their embedded tutoring looked like. Specifics such as LMS, software, course structure, modality, means of communication, examples of tutor interaction with students, are not mentioned. As someone who tried to keep our embedded tutor program alive—albeit in a limited, virtual capacity—I was excited to read Mendoza and Kerl's results. Clearly, what they did worked. If only we knew what that was. Regardless, the world has yet to stabilize, and higher ed must accommodate a plethora of contexts and perspectives while finding its own footing. No institution transitioned to remote flawlessly and many more had major hurdles transitioning back. As we have more and more time to reflect on the lessons learned and unlearned from COVID and post-COVID life, it's even more crucial now to share those lessons.

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Something to Think About: Incorporating Reflective Practice into Peer-Led Team Learning

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Author Note

At the time of the study, the author was an associate dean in the Office of Undergraduate Education at the University of Texas at Dallas, where the learning center was in his administrative portfolio. He is currently a senior associate dean in the Office of Undergraduate Studies at the University of Utah.

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Abstract

Research on reflections and their use in academic support programs has highlighted their benefits concerning student leaders or tutors as an evaluative tool to document performance and measure personal growth. Largely absent from the literature is evidence of the possible benefits reflections could have on the students using academic support services. To address this gap in

the literature, a study was conducted with students participating in a cohort-based academic success program to understand what value, if any, they found in using reflection as part of their experience. This article presents findings from a pilot study on the benefits of reflections in a Peer-led Team Learning (PLTL) academic success program. Sixty-five students and leaders were recruited across 12 PLTL sessions. Data were collected through student reflections at the end of each PLTL session and an end-of-semester survey to understand what the students perceived as the benefits of using reflections. Findings from this qualitative study show that the reflections did enhance the student experience by providing them with opportunities to rehearse and review material, perform self-checks for understanding, and develop confidence in their mastery of concepts. More research is needed and encouraged to deepen our understanding of how reflections can be leveraged in peer education.

Keywords: Peer-led Team Learning, peer education, reflections, reflective practice, student success

Something to Think About: Incorporating Reflective Practice into Peer-Led Team Learning

Peer-led Team Learning (PLTL) is an academic success program that allows students in the same subject to engage with course material outside of class in groups typically consisting of six to eight students (Gosser & Roth, 1998). These students are led by an undergraduate student who has passed the course and are trained in group facilitation, leadership, and other relevant pedagogical techniques (Guden & Bellen, 2020). Peer-led Team Learning has been implemented to support introductory courses in biology, chemistry, and other STEM disciplines. Studies have shown that students who participate in PLTL have earned higher scores on tests, had an improved student learning experience, and experienced increases in other student outcomes (Guden & Bellen, 2020; Tien et al., 2022; Wilson & Varma-Nelson, 2016).

Located in the Student Success Center, the PLTL program at the University of Texas at Dallas is similarly structured. Students register for weekly mandatory sessions that meet for one and a half hours. Students experience similar outcomes of increased grades, knowledge of course material, and overall success in the course through their participation in PLTL (Student Success Center, 2024). Despite the documented outcomes, administrators were interested in identifying additional ways to enhance the student experience and increase student engagement and metacognition.

One documented method to address the desired outcomes can be found in the programmatic components associated with High Impact Practices (HIPs) (Kuh, 2008). Support for and implementation of HIPs has increased across the landscape of higher education (Johnson & Stage, 2018). Kuh (2008) produced a taxonomy and empirical data supporting HIPs impact on student outcomes. Data show that using HIPs increased retention, engagement, and knowledge transfer of those students participating in the programs (Kilgo et al., 2015).

Among the eleven identified HIPs, PLTL shares many characteristics with collaborative assignments and projects (Kuh, 2008). Kuh (2008) notes that collaborative assignments and projects combine two goals:

> learning to work and solve problems in the company of others, and sharing one's own understanding by listening seriously to the insights of others, especially those with different backgrounds and life experiences. Approaches range from study groups within a course, to team-based assignments and writing, to cooperative projects and research. (p. 10)

Later, Kuh and O'Donnell (2013) outlined eight characteristics or conditions that could be used to evaluate if a program truly aligns with the student outcomes documented by HIP

participation. Of the criteria applicable to PLTL, "frequent, timely, and constructive feedback, and periodic, structured opportunities to reflect and integrate learning" (Kuh & O'Donnell, 2013, p. 10) were not current parts of the program. However, they could be addressed by incorporating "reflective practice" (Amulya, 2004, pp. 2-3). The absence of reflections in the PLTL program provided the opportunity to add another dimension to the student experience and align the program with HIP criteria.

This article will present the results from a pilot study that incorporated reflections into General Chemistry PLTL sessions during the spring 2020 semester. The purpose of the study was to ascertain if and how reflections benefited the students. Outcomes from the study were used to inform future decisions about using reflections in academic success programming. Findings and implications for further study are discussed later in the article.

Literature Review

Research concerning reflections has established it as an effective tool to enhance learning and for learning assessment across multiple higher education programs, applied learning pedagogies, and experience-based learning subjects (Bringle & Hatcher, 2009; Epstein & Draxler, 2020; Harvey et al., 2016; Landis et al., 2015; Weber & Myrick, 2018). This literature review begins with a review of the various definitions of reflection and presents its documented benefits across applied learning pedagogies and experience-based

learning subjects. It concludes with a summary of research on how reflections have been used in academic support programming.

Reflection Defined

Dewey (1933) described reflection as "the active, persistent, and careful consideration of any belief or supplied form of knowledge in the light of grounds that support it and the further conclusion to which it tends" (p. 9). His assertion that reflection is a cognitive process provides some of the basic foundation for subsequent models of reflection. Dewey further differentiates between reflective thinking from regular, everyday thinking, noting that action taken as a result of reflective thinking was "intelligent action" (Calderhead, 1989, p. 44) because, as Sellers (2017) notes, "aspects of the issue [being reflected upon] had been considered rationally and the practitioner had undergone periods of doubt and uncertainty while working towards finding a solution" (pp. 3-4).

Schon (1987) presents an additional perspective on reflection and offers two types: reflection-in-action and reflection-on-action. The former happens at the moment, and reflection-on-action happens retrospectively as the individual engaging in reflection prepares to adjust for the next situation (as cited in Jaeger, 2013).

Rogers (2001) noted the widespread adoption of reflections across many fields but also highlighted the lack of critical analysis or consistent definitions of reflections. He reviewed eight prominent theoretical approaches to reflection to establish commonalities in definitions and other elements of reflection. His analysis determined several common elements and produced the following synthetic definition:

> "reflection as a cognitive and affective process or activity that (1) requires active engagement on the part of the individual; (2) is triggered by an unusual or perplexing situation or experience; (3) involves examining one's responses, beliefs, and premises in light of the situation at hand; and (4) results in integration of the new understanding into one's experience." (Rogers, 2001, p. 41)

This comprehensive definition aligns multiple perspectives on reflection and is furthered by Rogers's (2001) insight for practitioners regarding the process of reflection, the use of certain techniques, and outcomes.

Outcomes of Using Reflections

Previous research has demonstrated the implementation and benefits of reflections across an array of higher education programming and applied learning pedagogies. Examples of these include but are not limited to service learning, (Bringle & Hatcher,

2009; Eyler et al., 1996; Harvey et al., 2016), internships (Harvey et al., 2016), ePortfolios (Landis et al., 2015), and undergraduate research (Weber & Myrick, 2018). Students and practitioners engaging in reflections have been shown to experience increased self-awareness, clarity in communication, the development of higher-order thinking (metacognition, reflecting thinking and expression), personal growth, and change (Harvey et al., 2016; Mathieson, 2016).

Additional outcomes for engaging in reflections involve a deeper understanding and better application of subject matter, an increased complexity of problem and solution analysis (Eyler & Giles, 1999), and "enhanced personal and professional effectiveness" (Rogers, 2001, p. 55). Reflection "need not be a difficult process, but it needs to be a purposeful and strategic process" (Eyler et al., 1996, p. 16). Though the evidence supporting the use of reflections is strong, simply using them does not guarantee that individuals or groups will automatically experience these benefits.

Reflections in Academic Support

Few studies investigate the use of reflections during tutoring (Bell & Mladenovic, 2013). Rather, the primary focus of those studies addresses its application for self-evaluation or as a component of tutor training for improved performance (Bell, 2001; Bell & Mladenovic, 2013; Bell et al., 2010; Epstein & Drazler,

2020; Govender & Alcock, 2020; Okawa et al., 1991). For instance, Bell and Mladenovic (2013) sought to understand what tutors thought about reflections. Their findings revealed that the tutors found various benefits from using reflections, including improving their performance.

Similarly, Bell (2001) instituted reflections for new Writing Center tutors for self-evaluation toward making needed improvements. Tutors were given a journal and three prescribed questions to reflect on, in addition to listening to recordings of their sessions and observing other tutoring sessions. One tutor noted, "Doing the reflection-on-practice exercises changed the content of my thinking about my tutoring a great deal" (Bell, 2001, p. 85). Using reflections yielded positive outcomes for some of the participants.

In a departure from using reflections solely for evaluative purposes, Epstein and Draxler (2020) also included a reflection essay for tutees. The reflection essay differed from a semester evaluation (often used in learning centers) in that the authors intentionally wanted to allow the students to develop "metacognitive skills to assess their own learning" (Epstein & Draxler, 2020, p. 516) rather than simply rating their experience using the service. Specifically, the reflection essay prompted students to review the institution's mission and goals as they related to their work with the tutor. However, a low response rate

produced little data as a result of the reflections being administered during the last tutoring session. Despite the limitations, the authors found value in the reflections and planed to continue their use.

Overall, through careful planning and execution, reflections have been shown to benefit those who use them. As previously mentioned, several programs and applied learning pedagogies use reflections to enhance the experience of the students participating in them (Bringle & Hatcher, 2009; Cranton, 2002; Ellis & Hafner, 2008; Epstein & Draxler, 2020; Harvey et al., 2016; Landis et al., 2015). The list of programs that use reflections extends to academic support programs such as tutoring. However, most of these applications seem to be relegated to enhancing the experience and skills of tutors.

Rationale for the Study

Little evidence exists regarding the direct application of reflections on students who use academic support services. Epstein and Draxler's (2020) work is possibly the closest example of this. Yet, their study used reflections as part of a multi-faceted assessment and administered them at the end of the experience rather than during each student/tutor interaction. Given the limited data collected from the study, the authors still found value in using reflections and intend to continue using them.

What would happen if students reflected on what they learned after using academic support services? According to Harvey et al. (2016) and Mathieson (2016), students can increase self-awareness, communication clarity, and develop metacognitive skills through reflections. Reflections in academic support services could be a zero-cost way of enhancing the experience and outcomes of the tutors and the students using the service.

Methodology

This case study sought to understand the perceived benefits of incorporating student reflections into a PLTL session. The purpose of this was to determine if reflections would be a value-add to the students. If the students did find value in their use, then steps would be taken to integrate reflections on a larger scale. To that end, this study addressed the following research questions:

RQ1: What perceived benefit, if any, do students find in doing reflections?

RQ2: What role can reflection play in documenting student learning or knowledge gained?

RQ3: How, if at all, can reflections enhance the PLTL experience for students?

RQ4: What new information is gained from reflections that was not previously available through current program evaluation methods?

Study Location and Duration

This study took place in the Student Success Center on the University of Texas at Dallas campus, a four-year research one doctoral-granting university. The Student Success Center is located in the campus library and occupies space on multiple floors. Peer-led Team Learning is one of many programs the Student Success Center provides. Five PLTL rooms were used for this study and were located on the basement level of the library. Like the other rooms used for PLTL sessions, the rooms used during the study can accommodate up to 13 people, including the PLTL leader. Additionally, each PLTL room has multiple white or glass boards, wheeled tables and chairs, and a computer sign-in station.

The study began during the second week of the spring of 2020 semester – when all PLTL sessions start – and lasted for 14 weeks. During the study, in-person PLTL sessions were shifted to virtual in response to the COVID-19 pandemic. One week of service was also lost due to an extended spring break. Peer-led Team Learning services and, subsequently, the study continued virtually for the remaining weeks of the semester.

Participant Recruitment

The participant recruitment process began with identifying a specific course supported by PLTL. General Chemistry II (CHEM 1312) was selected because PLTL sessions for this course were in

high demand. Also, historically, compared to other PLTL sessions, those for CHEM 1312 consistently had some of the highest attendance rates, meaning a larger pool of students from which to recruit. Peer-led Team Learning leaders were recruited after the course was determined. The leader recruitment pool was limited to only those who facilitated CHEM 1312 sessions and had an average prior semester (fall of 2019) session attendance rate of 75 to 100 percent. Recruitment emails were sent to the leaders who met this criterion. Six leaders responded and agreed to participate.

Student participants were recruited only from the PLTL sessions that were facilitated by the leaders who agreed to participate in the study. Each PLTL leader facilitated two sessions per week that lasted 1.5 hours each. The researcher and program staff selected which of the 12 PLTL sessions they were going to attend for participant recruitment. The researcher and program staff attended the first meeting of each of the 12 PLTL sessions during the spring 2020 semester to present the study and recruit participants. A summary of the study was presented, and the informed consent document was passed out and read out loud to all in attendance. Students had the option to opt out of participating in the study with no impact to their PLTL experience. If students chose not to participate in the study, they still attended the PLTL sessions but did not receive a reflection. Those students who agreed to participate were documented and began receiving reflections to

complete during the semester. In all, 65 students participated in the study (59 non-leaders and 6 PLTL leaders).

Data Collection and Analysis

Data was collected from the student participants using weekly reflections and an end-of-semester survey. During the last 10 minutes of each PLTL session, the PLTL leader shared a link to a Qualtrics reflection survey for each study participant to complete. After the final PLTL session, participants were sent an electronic end-of-semester evaluation to collect data on their experiences using reflections.

Survey Design

The reflection survey was created using the DEAL model for critical reflection (Ash & Clayton, 2004, 2009) as the primary framework. DEAL represents the method by which individuals should engage in critical reflection by Describing the experience, Examining the experience, and Articulating Learning. The survey also included questions adapted from a metacognition question sheet template (Agarwal, 2020) to promote retrieval practice and enhance learning.

The instrument consisted of seven questions, one of which was a Likert-type question; another question used facial expressions for the student to describe how the session made them feel. The remaining questions were open-ended. The last open-ended question was summative and was only asked at

monthly intervals (see Appendix A). Participant names were included in the survey so the PLTL leaders could provide feedback to the correct student. Making their names visible to their PLTL leader was addressed during the informed consent process.

In addition to the reflection survey, participants received a three-item survey designed to collect information on their experiences using reflections. This survey was administered at the end of the semester. The items in the survey included reflecting on the PLTL experience, feedback received from PLTL leaders, and the utility of reflections. Each item had between five and six Likert-type questions. Five open-ended questions were also part of the end-of-semester survey. One of the open-ended questions asked if students had used PLTL the previous fall semester. If they had previously used PLTL, they were prompted to compare their experiences with and without reflections (see Appendix B).

Data Analysis

Eight weeks into the semester, in-person services were transitioned to virtual due to the COVID-19 pandemic. Immediately before, spring break was also extended by one week to allow for the transition to virtual services. After classes and services resumed virtually, the participants continued to submit reflections. Reflection submission data showed fluctuating levels of participation during the study. However, there was a dramatic decline after the extended

break and transition to virtual services. Similarly, the end-of-semester evaluations suffered a low response rate.

Responses from the reflections and open-ended survey questions were analyzed using open coding (Yin, 2009) and were grouped into categories or themes. The responses for each Likert-type question (strongly disagree, disagree, neither agree nor disagree, agree, strongly agree) were counted to evaluate the most common responses for each of the question groups in the end-of-semester survey. At the end of the semester, 72 reflections were completed. The end-of-semester survey garnered 12 responses, though not all 12 students answered all of the questions.

Findings

Incorporating reflections into the PLTL program's framework was a hypothesized way to enhance the student experience and fully align it with HIP criteria. However, it was important to establish whether reflections benefitted the students before further program implementation. This study sought to establish that baseline and proof-of-concept. This section presents findings from the study as they address each of the four research questions.

What perceived benefit, if any, do students find in doing reflections?

The first research question sought to understand if the students benefited from using reflections. During the end-of-semester survey, participants were asked to "Describe any benefits you feel you experienced because of completing reflections." Six of the survey respondents answered this question. Participant responses are listed below:

- "I am not sure if completing reflection[sic] enhanced my learning, I complete reflections so that the school has more input and feedback."
- "I felt that I understood the material better."
- "They helped me recall what I had learned from the session, which made me remember more."
- "I identified few areas needed to be improved."
- "I believe reflections helped me get a good sense of what I knew and didn't know, which helped me focus on what I needed to practice for the exam."
- "I was able to think about what I learned in PLTL more carefully."

Five of the six respondents noted benefits that can be described as increased cognition, recognition of improvement areas, active memory retrieval, and content confidence. However, one respondent was unsure if the reflections enhanced their experience.

Despite their lack of assurance, they were happy to complete them so the institution had better data.

What role can reflection play in documenting student learning or knowledge gained?

One reflection component included a metacognitive question that asked the respondents to "Summarize what you learned this week so someone unfamiliar with the topic can understand." Metacognitive reflection questions such as the one students were given engage them in retrieval practice and develop a deeper understanding of the content by acting as if they are explaining it to others.

The answers to this question varied in length from short sentences to comprehensive paragraphs, distilling chemistry subject matter into understandable terms – at least for the author. Below are selected examples of the students' responses:

- "I learned about the difference between a galvanic cell and an electrolytic cell. A galvanic cell is where chemical energy is converted to electrical energy due to the flow of electrons to the cathode (+) from the anode (-) which is spontaneous. An electrolytic cell is the opposite and converts electrical energy into chemical energy through energy from a battery. The electricity flows from the anode (+) to the cathode (-) which is non-spontaneous."
- "A buffer is a solution that contains a weak acid and its conjugate base. This works because the acid does not completely dissociate and it [*sic*] able to go back and forth between an acid and base. A buffer works to resist change in pH."
- "I learned that the strength of an acid depends on its electronegativity and it's [*sic*] size. The more electronegative an acid is, the stronger it is. The larger the acid is, the stronger it is."

Survey participants reported on feedback in a separate question. Responses indicated that feedback was happening in the PLTL sessions, with eight out of 10 respondents agreeing that leader feedback helped them understand the concepts better. Eight out of 10 respondents also agreed that feedback from their peers helped them understand the concepts better, and a similar number of responses, eight out of 11, agreed that feedback from the PLTL leaders let students know they cared. However, only half of the respondents – five out of 10 – agreed they received feedback from their PLTL leader based on their reflections.

For the duration of the study, PLTL leaders and students received copies of the reflections. As such, the reflections had the potential to become a way to track areas of improvement and, over

time, see any progression in confidence, content mastery, and application. However, on the end-of-semester survey, only four out of 10 students reported that it was helpful to receive copies of their reflections. And only one out of 10 students said they used the copies to help them study.

How, if at all, can reflections enhance the PLTL experience for students?

During the end-of-semester survey, participants were asked how completing reflections affected their PLTL experience. Using five Likert-type statements, respondents indicated how much they agreed or disagreed with each of the options they were presented. From the data, 11 of the 12 respondents agreed or strongly agreed that reflections helped them identify areas they needed to improve. This was the most selected statement that indicated how reflections affected their PLTL experience. Eight of the 12 respondents agreed or strongly agreed that using reflections "helped me feel confident that I know the material" and "helped me feel organized." Open-ended response data supported these and other perceived benefits of reflections. Yet, not all the options were well received. Two respondents disagreed that the reflections "enhanced my learning during the PLTL session." Six of the 12 respondents neither agreed nor disagreed that reflections "made my PLTL session better."

Students were also asked to compare their PLTL experiences using reflections if they participated in the program the previous semester, when reflections were not used. Seven of the 12 respondents participated in PLTL during the fall of 2019 semester and responded based on comparing the two experiences. Responses included:

- "I was more aware of the concepts I understood and what was difficult for me as I would have to write them out in words. It helped me reflect [*sic*] what I needed to focus on."
- "Reflecting helped me specify what new concept I had learned and what I knew before the session."
- "I believe reflections helped me get an[*sic*] good sense of what I knew and didn't know, which helped me focus on what I needed to practice for the exam."
- "They helped me recall what I had learned from the sessions, which made me remember them more."
- "…helped me distinguish between what I knew and didn't know and what to study."
- "The helped me summarize the concepts in a succinct way which helped me know which topics I was sure of and which ones I should review."

What new information is gained from reflections that were not previously available through current program evaluation methods?

Each semester, PLTL program staff send satisfaction surveys to all students who use the service. These surveys gather summative information about leader performance and the overall student experience. The reflections add to the current evaluation methods by providing per-session data from questions not asked during the semester-based surveys.

During the reflections, students were able to rank their level of confidence in understanding the material covered during the session, what concepts they found difficult during the session, and what plans they had to ensure they understood those difficult concepts. They also had an opportunity to share how working in a group made them feel and what the best part of the session was – none of which were a part of any current PLTL assessment or evaluation.

Ranking confidence and articulating what was difficult are key data points that can be used by the PLTL leaders when providing feedback. It also helps the leaders determine if a brief review session is needed the following week before moving to new content. Other new data included learning the students' plans to ensure they understood difficult topics or maintain their level of understanding. Many reported strategies to address

difficult topics included watching review videos, completing more practice problems, and taking practice exams. Students trying to maintain their current level of understanding provided similar responses.

Discussion

Findings from this study show that reflections can enhance and/or transform students' experiences with them. Data from this study show that reflections have enhanced the experience of the students by helping them feel more confident that they know the material and are able to identify areas of improvement. While the study shows it was not beneficial for the students to receive copies of their reflections, general feedback from the PLTL leader was another important component of their experience. Furthermore, data shows that using reflections assists with information recall and provides new information to program administrators outside of their typical assessments and evaluations.

Literature on reflective practice is typically situated within service learning, undergraduate research, and other applied learning pedagogies. Previous research involving this transformational tool and academic support programs rarely focused on its use with the students using the support service. Rather, studies focused on tutors and other peer leaders' use of reflections as an evaluative tool (Bell, 2001; Bell & Mladenovic, 2013; Bell et al., 2010). This study, however, positioned reflections as an

instrument to enhance the engagement of the students using the service.

Each research question progressively investigated the relationship between reflections and the student experience. Data from the first research question established that students found using reflections beneficial in addressing their cognition, memory retrieval, and mastery of the material. These benefits are consistent with the documented outcomes of using reflections in a variety of contexts, including academic support services (Bringle & Hatcher, 2009; Epstein & Draxler, 2020; Harvey et al., 2016; Landis et al., 2015; Mathieson, 2016).

Regarding the second research question, there is not enough evidence to support the role of reflections in documenting learning or knowledge gained. Students could have used their summary question response as a baseline for their understanding of a certain topic and then, after time, refer back to it to measure if they have a better understanding of the material. However, end-of-semester survey data show that students either did not find using the copies of their reflections useful or did not use them for studying.

It is important to consider that the PLTL leaders had access to their students' reflections from which to provide formal or informal feedback and that the data showed that feedback from the PLTL leader was prominent and helpful toward the students

increased understanding of the material. Feedback allows the recipient to reflect further by integrating peers' suggestions toward further application and growth. Besides critiques, feedback can also be a vehicle for sharing encouragement or congratulatory statements. Such language from a peer could have affirming power and the ability to give the recipient confidence.

Findings from the third research question showed that some participants felt that using reflections somehow benefited them. The majority of respondents noted that reflections helped them identify areas for improvement. Others noted benefits that included feeling more organized and having increased confidence. These student experiences continue to align with the benefits of using reflections across various areas of higher education (Bringle & Hatcher, 2009; Cranton, 2002; Ellis & Hafner, 2008; Kolb & Kolb, 2005). Students' experiences in PLTL using reflections further validate the impact reflections can have across diverse groups and establish a foundation for its further use within academic support programs.

Whereas the responses showed the students found the reflections beneficial, how it was beneficial was not ubiquitous. More respondents indicated that the reflections helped with non-cognitive aspects of their experiences, referring to feelings of increased confidence and organization rather than any increase in learning. Based on the data, fewer students felt like the reflections helped them learn. While this could be viewed as a blemish on the

benefits of reflections, it should be noted that there was only one question on the reflection that asked students to summarize and articulate what they learned during the PLTL session. Additional data related to learning or academic achievement, such as grades and test scores, were not the focus of this study and, as such, were not included in the analysis. Those data, however, are captured by the PLTL program. The reflection instrument guided the students to reflect on their experience in PLTL, more so as a validation tool than solely to determine if they learned anything.

The final research question sought to understand if new information or data could be obtained from reflections compared to what is already gathered using the current program assessments and evaluations. Data revealed that the reflections could capture new student information not obtained through the program's semester and annual data collection. This information included how students planned to address difficult topics or maintain their overall understanding. Participants also were able to rank their level of confidence related to their understanding of course material. The PLTL leader can use this information to augment the next session or provide appropriate and timely feedback. The frequency of the reflections can also be instrumental in measuring the growth of a student – something that can be difficult with one-time semester or annual surveys.

Limitations

Two of this study's most noticeable yet impactful limitations were the low response rates for the end-of-semester survey and the declining reflection responses during the semester. Both can be attributed to the immediate modality shift caused by the COVID-19 pandemic. Halfway through the semester, the pandemic caused the university to extend spring break from one week to two weeks. Additionally, all support services and instruction transitioned from in-person to virtual for the semester. Before the pandemic, PLTL did not offer a virtual option. All sessions were in person.

As the weeks of the pandemic progressed, the students' priorities rightfully shifted to addressing the necessities of self and the best way to finish the semester. Completing a weekly reflection and, subsequently, an end-of-semester survey became less important. Canceling the study was considered. However, it was determined that as long as the services continued, so would the study. This was done fully aware of the strong likelihood of diminished response rates.

Implications and Next Steps

From the data, one can conclude that the students who participated in the study found value in using reflections. This is important as most of the higher education literature concerning reflections does not ascribe their benefits to the people who use a particular service - the implications of which could be far-reaching.

As an assessment tool, the implications of using reflections in learning centers are numerous as reflections can provide in-depth and often real-time data from the students using the services. Reflections can also provide rich data beyond grade analysis and student satisfaction surveys.

Reflections do not need to be time-consuming and can be distributed at various intervals throughout the semester. Daily, weekly, or even monthly use of reflections can create a longitudinal picture of student growth, content mastery, insight into the student experience, levels of metacognition, and more. Moreover, depending on the questions asked, some reflections have the potential to highlight aspects of belonging or the benefits of working in peer groups. Additionally, because reflections are so versatile, integrating them into the assessment plan could reduce the number of surveys used, decreasing the potential for students to experience survey fatigue.

With the aforementioned implications for using reflections, a few things should be considered before adding them to your academic support program. Peer-led Team Learning provided a perfect environment to implement reflections. The program structure of mandatory attendance in weekly sessions provided consistency that might have been lost in other academic support programs with less structured or voluntary attendance. However, that does not preclude other programs, such as study

pods, Supplemental Instruction, or drop-in tutoring, from incorporating reflections. In those instances, careful consideration must be given to the purpose of the reflection, the number of questions, and when the students would complete them. The small response rate is also something to consider. The next step would be to replicate the study with a larger student population and not conduct it at the height of a global pandemic.

How can reflections enhance the student experience? The students, in their own words, have answered this question. More investigation is needed to understand where and how reflections can be most effective in other academic support services.

Conclusion

Previous research has shown the efficacy of reflections in applied learning pedagogies (Bringle & Hatcher, 2009; Epstein & Draxler, 2020; Harvey et al., 2016; Landis et al., 2015) and they are an integral part of the collaborative project or assignment HIP (Kuh, 2008). Their association with academic support programs has been limited to those providing the service, for instance, tutors. Nevertheless, based on the findings from this study and the preliminary results of the follow-up study, there is evidence that using reflections can be an emerging and beneficial practice for those in the academic support community.

For 10 minutes in each session, the students in this study engaged in metacognitive questioning and retrieval practice to

answer each reflection question. This time allowed the participants to demonstrate learning through summarization, documenting which concepts they did and did not understand, thinking about how they could learn those difficult concepts, or writing how they would maintain the knowledge they have. Conversely, to draw a stark comparison, their peers who do not participate in reflections pack up their things and leave right after a PLTL session, potentially forgetting all that was learned during the session.

Whether or not to use reflections in collaborative learning programs or other academic support services is up to the institution. More research, testing, and trial and error are encouraged to fully understand how this proven tool can benefit our profession and the students we serve.

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Appendix A
Reflection Survey Instrument

Name: _____ PLTL Leader: _____

1. Please select your current week in PLTL

Week 1	Week 6	Week 11
Week 2	Week 7	Week 12
Week 3	Week 8	Week 13
Week 4	Week 9	Week 14
Week 5	Week 10	

2. What was the best part about your PLTL session today?

3. How did working in this PLTL group make you feel?

4. Summarize what you learned today so that someone unfamiliar with the topic would understand it.

5. To which extent do you agree or disagree with the following statement
   Using a scale of 1 to 5 (1=Strongly Disagree, 5=Strongly Agree):
   After today's session, I feel confident in my ability to correctly solve problems similar to the ones in this session on my own.
   1 2 3 4 5

6. What concept(s) from today's session did you find difficult to understand?
   (If no concept was difficult, please answer question 6b.)

6a. Specifically, what will you do this week to improve your understanding of the difficult concepts you listed?

6b. If you did not list any difficult concepts, please answer the following question. Specifically, what will you do to maintain or enhance your level of understanding of the concepts covered today?

7. Why is what you learned this month important? (monthly question)

Appendix B
End-of-Semester PLTL Survey

How many reflections did you complete?

- None (0), A few (5-1), Some (9- 6), Most (10-13), All (14)

Answer the following statements about how completing the reflections affected your PLTL experience using a scale of 1 to 5 (1=Strongly Disagree (SD), 5=Strongly Agree (SA))

Reflection and PLTL Experience

Completing the reflections…

	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
made my PLTL session better					
enhanced my learning during the PLTL session					
helped me feel confident that I do know the material					

helped me identify areas I needed to improve					
helped me feel organized					

Feedback

Answer the following statements about any feedback you received during your PLTL session
using a scale of 1 to 5 (1=Strongly Disagree (SD), 5=Strongly Agree (SA))

	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
I received feedback from the PLTL leader based on my reflections					
I received feedback from the PLTL leader at least once every session					
Leader feedback let me know they care					
The PLTL leader's feedback helped me understand concepts better					
Feedback from my peers helped me understand concepts better					

Reflection Utility

Answer the following statements about the function of reflections using a scale of 1 to 5 (1=Strongly Disagree (SD), 5=Strongly Agree (SA))

	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
It was helpful to receive copies of my reflections					
I used the copies of my reflections to study material I needed to review					
I would prefer to complete the reflection on paper					
I had enough time to complete the reflection					
I would rather use the 10 minutes for more PLTL rather than completing reflections					
I would continue to use reflections if offered in future PLTL sessions					

Open-ended responses

Answer the following questions

- I have participated in PLTL during the previous semester (y/n)
  - If yes, then please respond to the following statement to the best of your ability
    - Compared to last semester, describe any differences you feel writing reflections had on your PLTL experience.
- Describe any benefits you feel you experienced because of completing reflections.
- How, if at all, did the reflections contribute to your learning of CHEM 1312 concepts?
- What did you learn about yourself from completing the reflections?
- Please share any additional thoughts about the PLTL reflections.

Coaching to Learn: Motivating Students to Adopt and Adapt Effective Learning Strategies

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Abstract

Abundant laboratory and classroom research demonstrate the superior effectiveness of effortful learning strategies based on cognitive science over re-reading, highlighting, and other strategies more widely used by college students. However, persuading

students to adopt and adhere to effective strategies is difficult. This article outlines a novel, peer-to-peer intervention rooted in the Knowledge, Belief, Commitment, and Planning theoretical framework (McDaniel & Einstein, 2020) that emphasizes the need for students to believe in, commit to, and plan to use effective strategies rather than simply "know" them. Opportunities for faculty and learning center personnel to incorporate elements of the intervention into existing programming and adapt them to local institutional needs are described.

Keywords: training learning strategies, peer-to-peer strategy intervention, effective learning strategies, cognitive science, metacognition, motivation, desirable difficulties

Coaching to Learn: Motivating Students to Adopt and Adapt Effective Learning Strategies

Abundant research in laboratory settings and classrooms demonstrates the superior effectiveness of learning strategies based on cognitive science compared with passive techniques more often used by college students, such as re-reading, highlighting, or reviewing problems alongside step-by-step solutions (Dunlosky et al., 2013; Fiorella & Mayer, 2015; Pashler et al., 2007). Far less is known about how to motivate and train students to use research-based study strategies independently

and apply them across varied subject matter and courses (McDaniel & Einstein, 2020). This knowledge gap creates an opportunity for learning centers to build on their long history of innovation in helping students succeed academically (Arendale, 2004).

Equipping students with the learning strategies they need to succeed in college and in the fast-changing labor market they encounter after graduation is one of the most effective means of demonstrating the value of higher education. This effort is especially important now as higher education faces criticism on multiple political fronts (e.g. Confessore, 2023), polls track weakening public confidence in the value of college (Belkin, 2023), and artificial intelligence changes the work college graduates perform (Di Battista et al. 2023). Although many studies focus on learning strategies in the context of particular academic subjects, such as reading and mathematics (Donker et al., 2014), effective learning strategies are not discipline-specific. Indeed, students who employ discipline-independent strategies effectively are expected to learn better across subject matter and courses (e.g., Bernacki et al., 2016; Cogliano et al., 2021). Thus, scaffolding college students' development of skill in employing effective learning strategies has potential to improve performance for all students and merits consideration among the suite of offerings more typically included within learning center academic coaching programs, such as time management and goal setting (Singhani et al., 2022). This approach

also holds promise for reducing gaps between marginalized students, who often attend less well-resourced high schools and are thus less well-prepared for college than their counterparts from dominant groups (cf. Fink et al., 2020; Frey et al., 2018).

Barriers to Students' Adoption of Effective Learning Strategies

Spontaneous use of learning strategies requires more than knowledge, however. Students must often reframe how they understand the process of learning. By the time students reach college, they have spent the better part of two decades in school, typically without significant instruction in cognitive science research demonstrating that many of the most widely used study strategies are relatively ineffective. Not only do many students arrive at college gateway courses with a history of poor study habits, they often resist new study strategies because they cannot easily evaluate the quality of their own learning.

This occurs for two reasons. First, even relatively ineffective study strategies can produce short-term benefits, such as when students cram before an examination. Second, students often overestimate the benefits of weak learning strategies and underestimate the benefits of strong ones because the latter requires greater mental effort. Many students misperceive this sensation of mental effort as signaling failure to learn (e.g., Kirk-Johnson et al., 2019). In contrast, cognitive scientists who study students' choice of learning strategies identify this sensation of

mental effort as a natural by-product of fruitful learning. From this vantage point, effective learning strategies create "desirable difficulties" that enhance learning (Bjork & Bjork, 2011, p. 55). To adopt effective learning strategies, students need to believe the greater effort required by these strategies is worth their time (e.g., Yan et al., 2016). And they need support in developing concrete, practical plans to apply the strategies to their coursework.

In this article, we describe a learning-strategy intervention to overcome barriers that often deter students from using effective learning strategies. We provide preliminary results of a randomized study as early support for the intervention's positive academic outcomes. The intervention can be tailored to varied settings and purposes, including existing tutoring and coaching programs and individual courses.

The Coaching to Learn Project

Our project aimed at developing a relatively short, peer-to-peer learning strategy training program that could be embedded into an introductory university STEM course rather than a stand-alone science of learning course taught by an expert, as described in McDaniel and Einstein (2023). We were interested in promoting students' self-regulated learning through the use of specific cognitive strategies central to effective study. We focused on strategies that the cognitive science literature has revealed to be effective across multiple disciplines (Dunlosky et al., 2013; Pashler

et al., 2007). Our goal was to provide college students with a generalizable toolkit of cognitive strategies that they could apply to a variety of courses, and in so doing, improve their academic performance in demanding gateway STEM courses and throughout their college career. To achieve this goal, we incorporated key elements into the learning-strategy training that aligned with the Knowledge, Belief, Commitment, and Planning (KBCP) framework (McDaniel & Einstein, 2020; McDaniel et al., 2021).

We were also committed to a peer-to-peer based delivery model. A growing body of evidence supports the effectiveness of peer-based programs, particularly when training is ongoing and of high quality (Cooper, 2010; Dawson et al., 2014; Munley, et al., 2010; Topping, 1996). Students may find advice and instruction from peers to be more credible and relevant to their own college experiences (Cutright & Evans, 2016). And students can speak directly to those experiences. Another major reason is that peer-based delivery is scalable to large courses without the prohibitive expense of supporting a large staff of experts to provide the strategy training.

Knowledge, Belief, Commitment, and Planning (KBCP) Framework

A robust literature has underscored the difficulty of implementing learning-strategy training programs that promote students' sustained self-regulation and transfer of those strategies across a range of content. As Hattie et al. (1996) concluded from their meta-analysis of learning skill interventions, it is difficult to change study skills that students have acquired, and older students, including those at the college level, are more resistant to change. In considering received theories of self-regulated learning and the associated cognitive, metacognitive, and motivational research, McDaniel and Einstein (2020) suggested that four key elements needed to be incorporated into a training program to successfully support students' self-regulation of effective learning strategies.

(1) Students need **knowledge** about effective learning strategies. Many college students appear to be unaware of effective learning strategies (Bjork et al., 2013; Karpicke et al., 2009). And students face numerous challenges in developing effective study strategies on their own, including inaccurate metacognition and absence of objective access to effectiveness of learning strategies (McDaniel and Einstein, 2020) and biases toward less-effortful strategies (Kirk-Johnson et al., 2019).

(2) Students need to **believe** that those effective strategies work for them. In one set of experiments, Yan et al. (2016) were generally

unsuccessful in convincing students of the value of interleaving or mixing material across different concepts relative to blocking study on one concept before moving to the next concept. They concluded that it is difficult to overcome students' "willingness, even eagerness, to believe that 1 is unique as a learner—that what enhances others' learning differs from what enhances one's own learning" (Yan et al., 2016, p. 918). Only when each student participated in a demonstration in which they applied the interleaving strategy and the blocking strategy separately to two different sets of concepts and received an explanation of the superiority of interleaving relative to blocking, did students express a belief that the interleaving strategy was indeed more effective. In line with this finding and following from McDaniel et al. (2021), in the current training program we relied in part on demonstrations in which students participated to reinforce belief that the target strategies were effective for them.

(3) Students must **commit** to using the learning strategy. With insufficient commitment to the strategy, students may know about the strategy and believe that it works for them but be reluctant to exert the effort required to implement the strategy. For example, Wang et al. (2023) developed an intervention to teach students about the efficacy of retrieval practice and how to implement it flexibly through various formats. Yet, students' usage of the retrieval practice strategy

was negatively impacted by the cost of engaging in retrieval practice (too much time and effort involved).

(4) Students must adequately **plan** for how and when to use the strategy. Students may have knowledge about an effective strategy, believe that it works, and be reasonably motivated to use it; but without adequate planning the strategy may not be incorporated into their study routines (e.g., Hartwig & Dunlosky, 2012). For instance, in a survey an overwhelming majority of undergraduates (85%) attending a variety of institutions (universities, four-year colleges, and community colleges), endorsed a spaced study strategy ("studying the material in multiple sessions") relative to a massed study strategy ("studying the material in one longer session"; Susser & McCabe, 2013). However, the strategy that students reported actually using to study for a test did not overwhelmingly incorporate spacing; students did not report using spaced study more often than massed study. Students can talk themselves out of intentions to use effective study strategies because of time pressure (e.g., Maurer & Shipp, 2021) or competing priorities (Marsh et al., 1988). Accordingly, following findings that training for planning produces positive effects on self-regulated strategy use (Dignath et al., 2008; Donker et al., 2014), we included a planning component to the current training program. We now turn to a more detailed description of our intervention, followed by preliminary results supporting its promise.

Overview of the Knowledge-Plus Intervention

Knowledge Plus is a four-week, eight-hour intervention embedded in Calculus 1 at Syracuse University, a large, private research institution in Central New York. As explained further below, it is part of the larger Coaching to Learn Project. The intervention is administered by learning center professionals and student staff with collaboration from the Math faculty. The peer coaches are hired at least one semester prior to the start of a given coaching semester and receive at least 10 hours of training, including practice simulations, before they begin coaching and six or more additional hours of training during their first semester coaching. Training is certified through the College Reading and Learning Association's International Peer Educator Training Program and focuses on communication, ethics, and effective learning strategies rooted in cognitive science. Coaches are not required to have participated in coaching or to have taken Calculus 1, although many do one or both.

Students are scheduled to participate in two, hour-long coaching sessions per week for four weeks. The first session consists of a one-on-one meeting between the student and their assigned peer coach. During this session, the peer coach uses an interactive curriculum to introduce the student to that week's set of learning strategies and a related set of study skills or "tools" the student chose among for implementing the strategies. The

coach supports the student in making specific plans to try these tools and strategies in the upcoming week as they study for specific courses, including but not limited to Calculus 1.

A day or two after this one-on-one session, students attend an hour-long "supported study" session. Supported study is also led by a trained peer coach but involves groups of three to six Calculus 1 students. Supported study provides a scaffolded setting in which students discuss and compare their individual experiences experimenting with the week's broad learning strategies and more specific study tools. These sessions aim to bridge the gap between more tightly structured one-on-one coaching sessions and independent studying students do outside of coaching.

Conducting an evaluation of an intervention of this kind requires significant resources to allow for access to and monitoring of student data, Institutional Review Board approval for planned research, and close collaboration with the faculty in whose courses the intervention is embedded. However, the Knowledge-Plus intervention was deliberately designed so that interested learning centers and individual faculty can incorporate elements of the curriculum into their existing programming and/or courses, and to encourage those who are interested to collect data and analyze results. To facilitate this possibility, the following section provides a detailed description of the four-week Knowledge-Plus curriculum,

including illustrations and examples from each of the eight component hour-long sessions.

The Knowledge Plus Curriculum

The curriculum introduces students to one broad set of learning strategies each week and supports students in experimenting with varied options or "study tools" for implementing these strategies. (The content of each week is described more fully in subsequent sections of this article.) All these strategies require students to actively direct their learning using self-regulation and metacognition. This approach takes more effort than commonly used passive strategies, such as re-reading or reviewing math problems for which solutions are provided but yield better results (Bjork et al., 2013; Lawson et al., 2021). Peer coaches work with students at each weekly session to personalize the conversation and support students in planning how they will apply the new strategies in the upcoming week, not only in Calculus 1 but in other courses they are taking. This approach is designed to emphasize that the learning strategies are not domain specific while providing students with concrete illustrations of ways to apply the strategies to both calculus and non-calculus coursework.

By explicitly recognizing that more effective learning strategies feel harder but become easier over time and with practice, peer coaches encourage students to persevere in

experimenting with new strategies and seek to normalize feelings of initial discomfort or frustration. The goal is for students to adopt strategies they prefer and use them in ways they find sustainable. How well and with how much detail a student would be able to explain a particular strategy one or two semesters after coaching is of less concern than whether the student adopts elements of one or two of the strategies into their study routines and applies them across courses.

One-on-One Coaching Sessions

The one-on-one sessions are designed to share several common components. Each session introduces one focal set of effective learning strategies, while also foreshadowing strategies that will be covered in future weeks and reviewing those from previous weeks. This approach limits didactic content to manageable amounts and encourages students to draw connections across the four sets of learning strategies and consider using them in combination. Each session features engaged conversation between the peer coach and the student and includes one or two hands-on activities that promote this conversation. The coach walks the student through a set of PowerPoint slides. The slides are designed to support coaches in personalizing material to the interests of individual students while also fostering programmatic fidelity and a baseline for consistency across coaches and sessions. Each set of slides also features deliberate opportunities for students to share their ideas,

ask questions and voice concerns. Session-specific learning objectives are presented early in each session and reviewed before the session ends. Coaches are trained to present "no stakes quizzes" about previous weeks' materials as opportunities for effective learning and to draw students out in a friendly, supportive manner.

Supported Study Sessions

Like the one-on-one coaching sessions, the supported study sessions share key components across the four weeks. Each week, the peer coach opens supported study with introductions or re-introductions, making sure that students recall one another's names and establishing a friendly atmosphere that encourages all students to participate by drawing them into opening small talk. In the second part of supported study, the coach prompts students to engage in a retrieval exercise in which they recall the study plans they made during their earlier one-on-one coaching session that week. The students write down a brief account of their experiences. The coach then guides the students through a group conversation about these experiences, including successes and challenges. The coach works to draw students out and to address misunderstandings and concerns about the strategies and study tools.

The third segment focuses on a specific study skill that utilizes the week's set of learning strategies. The coach introduces this

"spotlight study tool." The coach then leads the students in using the tool together. At the end of each supported study, students have time to apply the tool individually or in pairs as they complete calculus homework or study for an upcoming calculus exam. The coach circulates and supports students in applying the learning strategies to calculus, not to assist students in understanding calculus concepts or arriving at the correct answer to specific calculus problems.

This final part of the session allows the coach to model the use of one study tool and related broader learning strategies and gives students the opportunity to practice on their own while the coach fields questions and offers encouragement. Overall, supported study sessions are designed to bridge the gap between highly structured one-on-one coaching sessions and studying students do on their own outside of coaching and to encourage students to develop the confidence and competence they need to use effective learning strategies independently.

Students are intentionally scheduled to meet with the same peer coach on the same day and time for all one-on-one sessions and with the same coach and fellow students on the same day and time for all the supported study sessions. This promotes consistency and routine, barring the need to reschedule.

Week 1: Retrieval and test-enhanced learning. During the first one-on-one coaching session, the peer coach establishes a

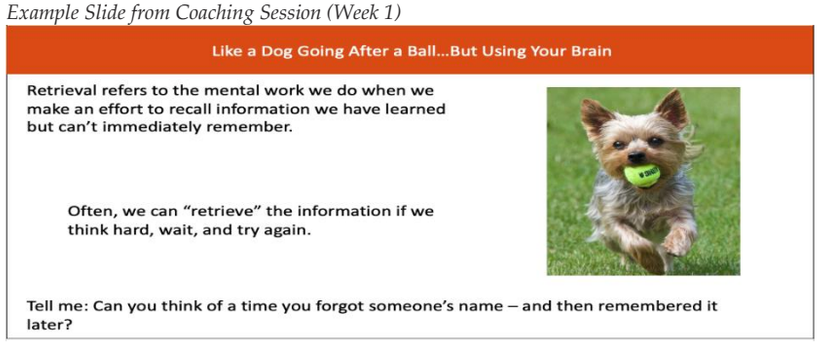
relationship with the student. They exchange basic information, such as their hometowns, how they came to the University, and how the students feel about taking Calculus 1. The coach explains that coaching can help students who feel confident about calculus study more efficiently, while students who find calculus challenging can benefit by studying more effectively. Then, following the PowerPoint presentation slide sets used for each one-on-one coaching session, the peer coach explains that the coaching program is based on a large body of cognitive science research that includes findings many college students find counterintuitive, including that rereading, highlighting, and reviewing problems with step-by-step solutions are relatively ineffective strategies (Bjork, et al., 2013; Karpicke, et al., 2009). Learners can succeed in mastering courses and subjects they fear or have done poorly in previously if they employ effective learning strategies that emphasize deeper understanding over superficial memorization.

The coach emphasizes that learning requires connecting new material to prior knowledge and then invites the student to engage in an activity based on McGuire's (2015) Count the Vowels exercise. This exercise helps students appreciate the value of context and pattern identification for interpretation and recall of otherwise isolated facts and provides an entry point for conversation about retrieval. The coach then introduces our

analogy of a "study toolbox" consisting of four sets of drawers. Each drawer contains one set of effective learning strategies but includes multiple specific study "tools" from which the student can choose to implement the strategies. The coach explains that the first set of strategies is called retrieval and invites the student to guess at what "retrieval" might mean in this context while displaying an image of a dog retrieving a ball (Figure 1). This approach deliberately foreshadows learning strategies that will be introduced in subsequent coaching sessions. At the end of the session, the coach introduces potential "tools" for implementing retrieval and explains that the students will be asked during their upcoming supported study to reflect on their experiences experimenting with three retrieval tools. The coach then walks the student through selecting which tools they will try and planning how to use them in specific courses as they study in the days before their supported study session.

Figure 1

Example Slide from Coaching Session (Week 1)



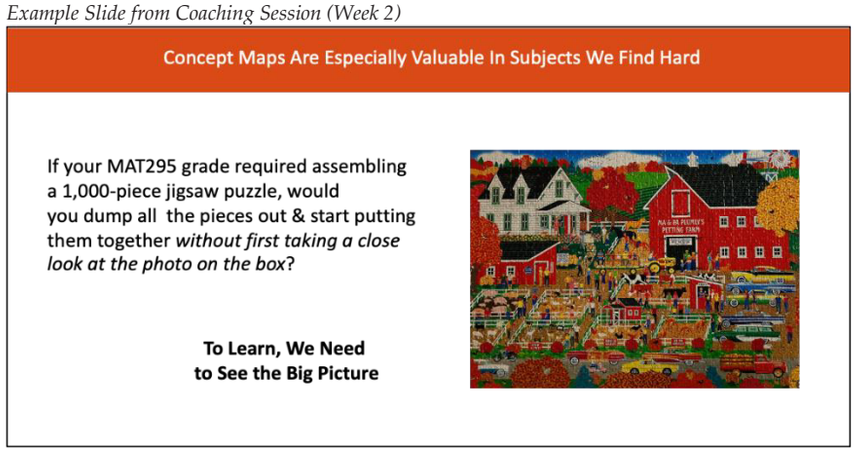
During the Week 1 Supported Study session, students use mind mapping to practice retrieval, emphasizing the value of creating a visual tool that includes text and drawing. In this instance, mind mapping is introduced as a straightforward tool for retrieval; the coach encourages students to brainstorm whatever relevant information they can recall about the topic selected for the "mind map" and jot that information down on paper in any order or format they like. The students work as a group to create a mind map for the University. Then, continuing to work as a group, they start another mind map, this time of their Calculus 1 course. The coach invites each student to contribute a topic or concept to the mind map, such as "limit" or "derivative," by retrieving relevant information from memory. Students then spend the remainder of the hour working individually or in pairs to continue building out their own Calculus 1 mind map.

Week 2: Organization. Week 2 introduces two forms of organization: organizing course material effectively to foster lasting understanding and organizing the time students spend studying to make that time as productive as possible. During this week's one-on-one session, the coach introduces the student to several techniques they can use to organize concepts, procedures and other course material they are learning. These include creating concept maps, making outlines and classifying course

material based on the student's self-rated level of understanding (previously known/learned; new knowledge as of today; in-progress knowledge/not fully understood). The coach emphasizes how these types of organizational study tools help students see "the big picture" and achieve a deeper, more cohesive understanding than is possible through more typical efforts to memorize discrete facts or techniques. One slide asks: "If your MAT 295 [Calculus 1] grade required assembling a 1,000-piece jigsaw puzzle, would you dump all the pieces out and start putting them together without first taking a close look at the photo on the box?" (Figure 2). Throughout, the PowerPoint slides present and repeat imagery combined with text that reinforces one another and supports students' dual coding of learning strategies and related concepts through complementary neural pathways for processing textual and visual information (Mayer & Moreno, 2003).

Figure 2

Example Slide from Coaching Session (Week 2)



The second one-on-one session also includes a calendaring exercise to promote time management and a growth mindset assessment to foster motivation and encourage persistence. The Week 2 supported study session includes discussion of students' experiences experimenting with organizational strategies and cements understanding of concept maps, which were introduced during the previous, one-on-one session as an organizational tool distinct from mind maps in their emphasis on illustrating relationships among terms, concepts, and procedures students are learning in a course. The coach leads the group in beginning to create a concept map for Calculus 1 on a white board, inviting each student to contribute at least one feature they recall from the course. The coach reminds students of the advantages of combining imagery and text to promote retrieval and organization. Students spend the remainder of the session completing their own Calculus 1 concept map individually or in pairs and using the concept map to study for the course.

Week 3: Spacing and Interleaving. The third one-on-one session introduces students to the advantages of spacing compared to massed practice (Figure 3) and interleaving related material within a course or between courses that share common concepts (Figure 4). The coach explains the value of guessing at answers to questions one has not yet been taught and explicitly introduces the concepts of "productive failure" and "desirable

difficulties" in learning, which have been foreshadowed in earlier one-on-one sessions (Clark & Bjork, 2014). The coach briefly describes research studies of the value of spacing and interleaving in mathematics and engages the student in reflecting on their assumptions and feelings about learning Calculus and other challenging academic subjects. The coach points out that we are often more accepting of the idea of learning from mistakes and experiencing learning as challenging outside of traditional academic contexts, such as team sports or studying a musical instrument. The third supported study session introduces the students to Venn diagramming as a tool they can use to identify related concepts that lend themselves to interleaving. The coach leads the group in creating a Venn diagram identifying similarities and differences across baseball, football, and basketball. The students then create a Venn diagram identifying related concepts within Calculus 1 or between Calculus 1 and other courses they are taking, such as Physics 1.

Figure 3

Example Slide from Coaching Session (Week 3)

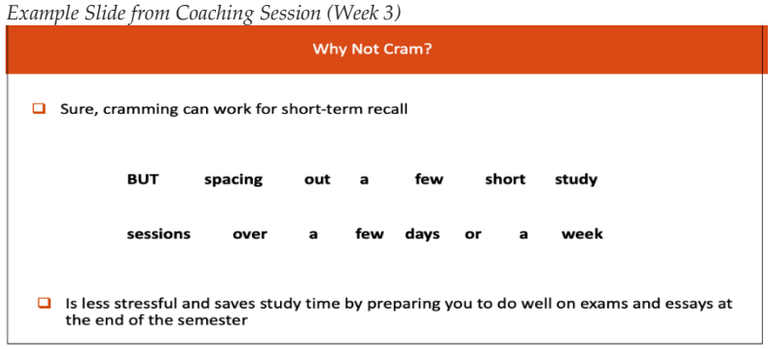
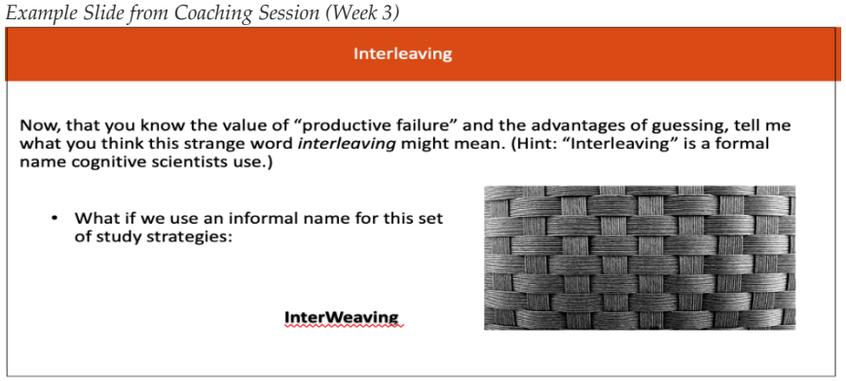


Figure 4

Example Slide from Coaching Session (Week 3)



Week 4: Elaboration and Explanatory Questioning. The final week of the curriculum focuses on elaboration and explanatory questioning as well as combining the four sets of effective learning strategies during independent study. The one-on-one session emphasizes taking stock of students' feelings about the strategies and the mental effort they require. The coach compares developing good study habits to judiciously adding salt to food; adding some effective strategies into existing study routines is the goal, not reinventing oneself as a student or dramatically increasing study time. The coach encourages the student to "be patient with yourself" and recognize that making even small changes to study routines is hard work (Figure 5). The final supported study session likewise emphasizes student choice and opportunities to experiment with combining the learning strategies.

Figure 5

Example Slide from Coaching Session (Week 4)

The Randomized Trial

A central aspect of our Coaching to Learn project is a comparison of outcomes from the Knowledge-Plus intervention with a loosely parallel, four-week "Knowledge-Only" intervention. The Knowledge-Only intervention consists of a set of four online modules and four related quizzes focused on the acquisition of knowledge about the learning strategies. This "active control" is designed to reflect a "standard" strategy-training approach that focuses solely on information about effective learning strategies. All students enrolled in the target course (Calculus 1, as described below) were randomly assigned to one of the two interventions, thereby ensuring a high standard of rigor comparing outcomes for these two groups. This design is advantageous in that it tests the value of the KBCP theoretical model, which posits that knowledge about the strategies per se is insufficient to motivate most students to adopt more effective learning strategies. This evaluation answers

the question: Are there differences in student performance for those who were randomly assigned to Knowledge-Only coaching compared to those randomized to Knowledge-Plus? This approach allows us to create roughly parallel experiences and incentives for students participating in the two interventions. While a control group that did not receive the intervention would allow us to determine the impact of the Coaching-to-Learn program generally, ethical concerns related to the potential disadvantage in Calculus I for untreated students made this choice untenable.

General Method

The research team collaborated with the Math Department at Syracuse University to embed the two interventions in Calculus 1, a large course taken by a diverse group of approximately 700 students annually and widely perceived by students as challenging. The complete evaluation of this program involves interventions over four semesters beginning in Fall 2022 and concluding in Spring 2024. In each 14-week semester, Calculus 1 students were randomly assigned to the Knowledge-Only or Knowledge-Plus groups. Completion of the program counts for four percent of students' final calculus grade regardless of treatment group. To earn this four percent, students need to complete their randomly assigned treatment (eight, hour-long coaching sessions for the Knowledge-Plus group and four online

modules followed by four quizzes for the Knowledge-Only group) and pre- and post-intervention learning strategy surveys. Students provided informed consent for use of their data in the research project. All research protocols were approved by the University's Office of Research Integrity and Protections.

Although the randomized trial is scheduled to end following the Spring 2024 semester, data collection and analysis will continue until the Spring of 2025. Students who participate in coaching will be followed for at least two additional semesters afterward to allow collection of individual course grade and semester grade point average data. We will also collect multiple, detailed sources of student self-report data about their study strategies before and after the intervention and their attitudes toward the intervention to which they were randomly assigned. Below, we describe planned analysis of all four cohorts of coaching students along with a preliminary analysis of the final exam scores in Calculus I for the Fall 2022 cohort.

The quantitative and qualitative measures that we are collecting and analyzing as part of the Coaching to Learn project derive from four sources: (1) student demographic, socio-economic, and academic information available through Syracuse University's administrative data systems, including gender, race-ethnicity, citizenship, first generation status, high school grade point average, Calculus 1 exam and course grades, other course grades, and

progress toward graduation; (2) a version of the Motivated Strategies for Learning Questionnaire (MSLQ) (Jackson, 2018; Pintrich et al., 1993) modified to incorporate new items directly relevant to coaching on retrieval, organization, spacing and interleaving, and elaboration; (3) responses to brief sets of survey questions embedded in the Knowledge-Only modules and the Knowledge- Plus coaching sessions, which probe students' reactions to the intervention and to the learning strategies; (4) a new Study Strategy Survey developed by the intervention research team to probe lasting understanding of the learning strategies among coaching students who go on to take Calculus 2 and the degree to which students spontaneously transfer these strategies to their study routines for this course. Calculus 1 students completed the modified MSLQ before they begin coaching and after they complete coaching.

Preliminary Results from Fall 2022

Completion Rates. In the Fall of 2022, most Calculus 1 students completed their assigned treatment. Interestingly, completion rates were higher among the Knowledge-Plus treatment although this treatment required in person participation and offered less scheduling flexibility than the online modules. Specifically, 78 percent of the 197 students randomized to the Knowledge-Plus treatment completed the pre- and post-coaching MSLQ and attended their eight coaching

sessions, compared to 70 percent of the 201 students randomized to the Knowledge-Only treatment who completed the pre- and post-coaching MSLQ and the four online modules and quizzes.

Preliminary Academic Outcomes. The Fall 2022 Calculus 1 students randomly assigned to the Knowledge-Plus group outperformed their Knowledge-Only counterparts on the Calculus 1 final exam score. Intent to Treat (ITT) results, which included all students in both treatment groups regardless of whether they completed their assigned intervention, found that the average final Calculus exam scores of Knowledge-Plus students were 3.4 points higher than those of Knowledge-Only students (t-test; $p<0.08$; 100-point exam scale). These ITT regression analyses controlled for student year, citizenship, first-generation status, high school grade point average, and engineering versus other majors, as well as stratification by under-represented minority status and Calculus 1 section. (Further details are available from the authors upon request.)

Conclusions

The Coaching to Learn project has established several notable advances. First, we have demonstrated the viability of a theoretically guided learning strategy intervention that incorporates cognitive and metacognitive elements consistent with the KBCP framework (McDaniel & Einstein, 2020). These include transmitting **knowledge** about generally effective learning strategies and

illustrating specific study procedures to implement those general strategies (through one-on-one coaching and small-group supported study sessions); fostering students' **belief** that the strategies work for them (through exercises and peer-led discussion of students' successes with the strategies); forging students' **commitment** to apply the strategies in their course (through peer-supported study sessions and discussion of how to adapt and use the strategies in their courses); and encouraging students to **plan** to integrate the strategies into their study activities (through follow-up activities that were revisited in subsequent sessions). The intervention is tractable on a number of dimensions. It is relatively short (2 hours/week for four weeks); it is implemented within a particular academic course (rather than a semester-long 3-credit course dedicated to learning strategy training; McDaniel et al., 2021) and it likely can be implemented as a 4-week workshop at college learning centers; it is scaled for use in a very large enrollment introductory college course; and it does not require hiring of professional university staff, relying instead on peer-to-peer coaching.

Second, we have shown that the four-week Knowledge-Plus intervention is acceptable to students. In the Fall 2022 trial, 78 percent of the students randomized to this Knowledge-Plus intervention completed the curriculum. Third, in an initial evaluation of the Knowledge-Plus intervention relative to a more

basic Knowledge-Only comparison, students in the Knowledge-Plus intervention had better final exam scores in the Calculus 1 course in which the intervention was embedded. Thus, Knowledge-Plus peer coaching curriculum may improve students' academic performance, at least in the semester in which the students engage the curriculum. Future data collection and analysis will allow us to more fully evaluate the impact of the intervention, including the transferability of skills outside of Calculus and the sustainability of benefits over time.

We hasten to acknowledge that there are limitations of the evaluation study. The Knowledge-Only treatment involved only half the instructional time devoted to the Knowledge-Plus treatment. Thus, it remains possible that if the time feature was comparable, Knowledge-Only would fare as well as the Knowledge-Plus treatment. Further, the Knowledge-Plus treatment involved in-person coaching, whereas the Knowledge-Only control was self-administered (online). Accordingly it remains possible that the delivery method per se could play a role in better outcomes for Knowledge-Plus. Additionally, for ethical reasons we did not assign students to an inactive control group. It may be that the Knowledge-Plus treatment produces even more dramatic academic benefits relative to students who receive no instruction in effective learning strategies. At present, it is likely that a high proportion of today's college students receive either no learning strategy instruction or

ineffective instruction. Coaching to Learn is one approach that might help remedy this unfortunate situation. Our hope, especially if the complete results continue to show success, is that this initial account of the intervention will inspire learning center professionals and faculty to consider adopting and adapting elements of our Knowledge-Plus curriculum to their programming and courses.

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Idea Exchange: Changes to the Writing Center Approach

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Editor Note

This submission builds on the previously published TLAR article: Savarese, C. (2021). Understanding Writing Center Use among Community College Students. *The Learning Assistance Review*. 26(2), 23-52.

Idea Exchange: Changes to the Writing Center Approach

In the article "Understanding Writer Center Use among Community College Students," Christina Savarese addresses the reasons students use the writing center, understanding those reasons, and using them to identify ways the writing center administrators and tutors can better serve their student population. Savarese's initial research found that self-efficacy of the student's writing and perception of the writing center may be the reasons for the non-use of the writing center. Additional research findings illuminated that focusing on bridging the gap between the student's and tutor's expectations and why the students decide to take advantage and use the writing center or not will be beneficial for writing centers. Savarese researched a public suburban community college in the Spring 2020 semester to further research this concept, where "out of 579 possible participants, 434 students submitted surveys" (29). Based on her findings, Savarese concluded that many students do not use the writing center services because they are too busy or do not feel they need help with their writing. This appears

to be a common issue across other community colleges. Cherry (2019) suggests that the bigger issue is that most students feel that tutoring is only for struggling students. Salem (2016) further suggests that, by and large, students with greater social and economic privilege make educational decisions, like coming to the writing center, that maintain or increase their privilege, while students with the least privilege make decisions that limit their economic and social mobility. Therefore, proposing that it is less about being too busy and needing help with their writing, but rather students' implicit social belief that affects their educational choices. As a tutoring center director, examining these proposed reasons to see how they relate to our center and what initiatives we should implement to better respond to our specific students is critical.

There are a variety of reasons that a student decides to attend a community college. I believe these reasons are also associated with why a student may or may not visit the writing center during matriculation. Examining the research, we can see several common themes associated with the benefits of attending a community college. Warner (2022) reports that the top 5 reasons for attending a community college are (1) lower cost, (2) a path to a four-year college, (3) proximity to home, (4) flexibility, and (5) workforce training. These benefits are closely associated with why students do not use the writing center, as addressed by Savarese (2021) and Salem (2016).

Socioeconomic Factors

Salem (2016) proposes that students' socioeconomic condition may influence their decision-making and that a lack of access and an expansive view of what to expect to achieve directly reflect why they choose not to use the writing center. Many students attend community college because of the lower cost, which is often

associated with their socioeconomic condition at the time of attending. Additionally, many students have a full-time or part-time job, which correlates with why many students are too busy to go to the writing center based on Savarese's (2022) findings. When considering both reasons for students' non-use of the writing center, it would be beneficial to suggest alternative methods for students receiving support on their writing that may occur outside the writing center. Chibani (2014) suggests that technology simplifies the tutoring process and motivates the student since technology is a main part of life. This is important to consider when many students may have a job or other life circumstances preventing them from using the tutoring center for face-to-face tutoring. Here at the College of the Mainland, we use two forms of e-tutoring for writing. We use an asynchronous and synchronous program for our writing center, which allows the students the flexibility to get the help they need in the way that best suits their lifestyle.

Lack of Need

Another factor in Savarese's (2022) study was students' perceived lack of need to utilize the writing center for writing assignments. Many students felt that they did not need help or that it was only needed in remedial coursework classes. This is an interesting element to explore because there may be a need for both faculty and writing center staff to work closely together to understand the writing needs of the students. One of the five factors for students attending community college was workforce training. Rios et al. (2020) conducted a meta-analysis that found that oral and written communication are in high demand by employers, particularly emphasizing the pairing of oral and written communication. If workforce training is a possible primary reason for students to attend a community college, the college should prepare students with quality oral and written communication. This demonstrates a

particular need for the writing center to work closely with faculty to address students' oral and written communication by promoting students' use of the writing center for more than remedial coursework. The writing center can also provide services unrelated to class assignments, such as writing workshops, resume writing, and workplace writing (i.e., memos, professional emails, cover letters, and reports). These additional writing supports will build the relationship with the students and faculty, increasing the use of the writing center.

As a writing center at a community college, we are here to provide for the needs of the students. Understanding why students choose the tutoring center is essential to know what changes we need to make to our programming to encourage more students to utilize our services. Savarese's (2021) research presented two key reasons students do not use the writing center: too busy and lack of need. In reviewing these reasons and identifying the reasons students attend community college in the first place, the research illuminated possible ways to reach students who would not regularly use the writing center. There are many other ways a writing center can address their student's non-use based on their student population, by employing a survey that addresses their non-use and overall reason for attendance. The writing center can then create programming specifically for their students.

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Michael Frizell is the Director of Student Learning Services at Missouri State University. In this position, he helped lead a team that developed the Bear CLAW (Center and Learning and Writing), growing it from a standalone Writing Center to a dynamic modern learning center. Since 2012, he has served as the editor of The Learning Assistance Review, the peer-reviewed journal of the International College Learning Center Association, and their book, Learning Centers in the 21st Century. At the height of the COVID-19 crisis, Frizell collected the stories of learning center leaders across the country into the book Rising to the Challenge: Navigating COVID-19 as Higher Education Learning Center Leaders. He has been ICLCA's corresponding secretary and was president twice. He is also on the editorial team for RiLADE and serves as Vice Chair of CLADEA. In addition, he is an ICLCA Certified Learning Center Professional, Level 4 (Lifetime), and a CLADEA Fellow. He is a prolific speaker, presenting hundreds of workshops and informative speeches, guest-starring in podcasts, radio and television shows, and more.