

The Learning Assistance Review

Michael Frizell, M.F.A.
Editor

Volume 26, #2 Fall 2021



The Learning Assistance Review © 2021 National College Learning Center Association
Volume 26, #2 Fall 2021

Editor: Michael Frizell

Designer: Michael Frizell

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ISSN 1087-0059

Amazon ISBN 9798685606846
Printed using KDP on Amazon

Editor, Layout, & Design

Michael Frizell, M.F.A., is the current vice president of the National College Learning Center Association. As the first person to be elected twice to the role, he served as Immediate Past President, President, and Vice President from 2016-2019 after a stint as Corresponding Secretary from 2011-2012. Michael earned the NCLCA Certified Learning Center Professional (Level 4) lifetime achievement designation in 2012 and has served on the Frank Christ Outstanding Learning Center Award Committee, President's Outstanding Learning Center Award Committee, Innovative Use of Technology Award Committee, and the Conference Committee. He was also the first chair of the Immediate Past-President's Council from 2018-2020.

In addition to his leadership in NCLCA, since 2012, Michael has served as the editor of *The Learning Assistance Review*, NCLCA's peer-reviewed journal. *TLAR* seeks to foster communication among higher education learning center professionals by publishing two issues a year. During the COVID-19 crisis in 2020, he published a collection of essays, *Rising to the Challenge: Navigating COVID-19 as Higher Education Learning Center Leaders*, describing how learning center leaders reacted to campus-wide shutdowns.

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About *The Learning Assistance Review*

The Learning Assistance Review is an official publication of the National College Learning Center Association (NCLCA). NCLCA serves faculty, staff, and students in the field of learning assistance at two- and four-year colleges, vocational and technical schools, and universities. All material published by *The Learning Assistance Review* is copyrighted by NCLCA and can be used only upon expressed written permission.

NCLCA's Definition of a Learning Center

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

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Letter from the Editor

Michael Frizell, M.F.A.
Missouri State University

It is not enough to clear a space and rearrange furniture to create an area for tutoring and writing support. Any learning-centered environment's strength is to create an exciting and safe space for collaborative learning, student-faculty interaction, and synergy among various departments.

Learning centers are the academic heart of any institution, attending and contributing to holistic intellectual development. Critical thinking and metacognitive practices are the tools of the trade, but assisting students in achieving personal success is paramount to a learning commons.

The National College Learning Center Association defines a learning center at higher education institutions as "interactive, academic spaces that exist to reinforce and extend student learning in physical and virtual environments." Thus, a wide variety of comprehensive student and faculty support services and programs should be offered to enhance student academic success, retention, and completion. In addition, best practices, theories governing student learning, and addressing student-learning needs from multiple pedagogical perspectives are essential.

Faculty striving to approach their classes where learning is the focus should proactively respond to student needs, utilizing

early-alert systems, referrals, and comprehensive, pedagogical approaches to draw students into the learning cycle. In addition, tutors, consultants, fellows, mentors, advisors, and faculty should be trained in the latest learning theories while striving to be actively engaged in the pedagogical conversations regarding learning at the national and international level.

Learning centers seek to instill a sense of self that empowers students to strive for more in and out of the classroom. When teaching an art form, human emotions inevitably trigger resistance. Writing is hard. Performing onstage, opening yourself to scrutiny by your peers is even more difficult. Yet, students will embrace neither of these art forms without due diligence in creating a safe, welcoming atmosphere where failure is adopted as a valuable moment for learning - a teachable moment that inspires the student's best. What is a teacher if not a facilitator, a mentor, or a sounding board? Gone are the days of the "sage on the stage." Good teachers understand that the students' collective intelligence in the room is greater than those standing behind the podium.

Learning center leadership is about enhancing the skills of those you work with, ensuring they have the space and the confidence to take risks and chances, and supporting them to excel.

Make a Note of It: Comparison in Longhand, Keyboard, and Stylus Note-Taking Techniques

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Abstract

This study investigated the influence of longhand (paper and pen), keyboard, and stylus note-taking on academic performance in college classes. Students attended mini-lectures and took notes using longhand, keyboard, or stylus. Students took quizzes after each mini-lecture and reported their engagement. Final course grades were recorded. Note-taking did not directly affect recall, but students performed better using their preferred note-taking method. Stylus and longhand note-taking conferred advantages in course grades and were associated with higher perceived recall and engagement. Although there may be advantages to longhand and stylus note-taking, it is important to allow flexibility for student note-taking preferences.

Keywords: Note-taking, longhand, stylus, keyboard, Introduction to Psychology

Make a Note of It: Comparison in Longhand, Keyboard, and Stylus Note-Taking Techniques

Note-taking is essential in college courses because it improves content memory and is an important tool for learning (Bohay et al., 2011). Longhand note-taking, using pen and paper to write by hand, is commonly used in college lectures, and some evidence has suggested it provides academic benefits (e.g., Morehead et al., 2019; Mueller & Oppenheimer, 2014). However, some students prefer technology-assisted note-taking tools, such as a keyboard, a stylus, and a touchscreen tablet. Stylus use mimics longhand processes, as note-takers use more complex motor movements, thus it may create similar benefits to longhand (Smoker et al., 2009), but it also produces digital files. As many campuses take on costly technology initiatives in hopes of improving students' academic outcomes, it is important to investigate how these technologies can contribute to success within the classroom.

Note-taking and Academic Performance

Longhand versus Keyboard

It is well-established that note-taking is important for remembering information and improving performance (Bohay et al., 2011; Jansen et al., 2017; Rahim & Meon, 2013). However, previous work demonstrates that different note-taking methods may have unique impacts on academic performance. Within the classroom, studies have shown general laptop bans increase

academic performance and exam scores (Carter et al., 2017; Patterson & Patterson, 2017). Although these studies do not specifically assess note-taking, one can assume that students without technology are taking longhand notes. In addition, students who either chose (Aguilar-Roca et al., 2012) or were assigned (Artz et al., 2020) to take notes using longhand performed better on class tests. More controlled lab studies have also confirmed the benefits of longhand versus keyboard note-taking on test performance and memory (Morehead et al., 2019; Mueller & Oppenheimer, 2014; Smoker et al., 2009), particularly if students are given time to review their notes (Luo et al., 2018). However, these effect sizes are often quite small.

Conversely, other studies have found benefits to keyboard compared to longhand. For example, although students in laptop-banned classes self-reported more improved knowledge, paper and exam grades demonstrated better performance in classes that allowed technology (Elliott-Dorans, 2018). In the lab, students did better on a test of memory after taking notes using keyboard versus longhand (Fiorella & Mayer, 2017). Students typing on a keyboard tend to include more words and more complexity (Luo et al., 2018; Morehead et al., 2019; Van Der Steen, 2017), which may improve scores. However, there may be shallower processing of information because of the tendency to transcribe information verbatim (Mueller & Oppenheimer, 2014). Thus, the keyboard provides the advantage

of more extensive, faster note-taking, although it may promote shallow processing.

Although numerous studies have investigated the impact of longhand and keyboard note-taking on academic performance, findings are still quite unclear. While some studies have failed to find differences in performance in all or some contexts (e.g., Bohay et al., 2011; Carstens et al., 2015; Carter et al., 2017; Luo et al., 2018), there seems to be a slight advantage to longhand notes over keyboard. Technology itself may serve as a significant distraction in the classroom if the in-class internet and computer usage are non-academic. This may, in turn, have negative impacts on performance (Ragan et al., 2014; Ravizza et al., 2016). However, technology-assisted note-taking may not always be detrimental, and could, in fact, be advantageous depending on instructor support and the structure of technology use.

Stylus

In contrast to longhand and keyboard note-taking, relatively little research has been done on the effectiveness of a stylus for note-taking. A stylus is a digital pen that can be used on a touchscreen device to take handwritten notes. Notes created with a stylus can be saved, organized, converted to text, and edited (Pfeuffer et al., 2017). Because stylus and longhand writing processes are physically similar and produce notes similar in word count, complexity, flexibility, and spatial strategies (Morehead et al., 2019; van Wyk &

van Ryneveld, 2018; Wollscheid et al., 2016), one might expect similar benefits to memory and performance. Although Morehead et al. (2019) found no difference in performance between stylus, keyboard, or longhand, Osugi and colleagues (2019) found that stylus use may improve learning compared to longhand. Thus, because the stylus combines the advantages of longhand and technology-assisted note-taking, it could be an important tool that needs further investigation.

Class Engagement

Some note-taking methods may promote engagement during classes, in addition to academic performance. For example, more rapid note-taking on a keyboard may encourage classroom participation (Carstens et al., 2015). However, the deeper processing of information associated with longhand note-taking may result in greater cognitive engagement with the material (Mueller & Oppenheimer, 2014; Smoker et al., 2009). Similar effects may occur with stylus. As a result, students using stylus or longhand may be more able to readily answer questions and engage during class. Consistent with this, students in technology-banned classes reported more enthusiasm and interest in the class topic (although technology-optional classes had better attendance; Elliott-Dorans, 2018). Conversely, both keyboard and stylus note-taking provide the temptation for off-task behavior, which may limit engagement (e.g., Ragan et al., 2014; Ravizza et al., 2016), although some

evidence suggests this off-topic behavior does not negatively impact students' performance (Aguilar-Roca et al., 2012). Because class engagement is intertwined with deeper cognitive processing, understanding the engagement implications for various note-taking strategies could promote academic success.

Present Study

The inconsistency in previous findings suggests that the effectiveness of note-taking strategies may vary based on the specific conditions of use. Many previous studies of the classroom have looked at technology bans rather than specific note-taking modalities. Moreover, many of these studies simply provided students with the option to use technology (and those who chose to, brought their own devices). Thus, it is important to explore these effects when students have uniform access to the same technology. In addition, many of these studies aimed to answer questions about which methods work better for students in general. It is important to also consider the possibility that there may be individual differences in the effectiveness of and preference for various note-taking strategies.

Thus, this study compared three note-taking methods in college-level Introduction to Psychology courses. Students attended mini-lectures on three different topics and took notes using either longhand, keyboard, or stylus, and then took a short recall quiz. Students all used the same technology (Apple iPad, Apple Pencil,

and Smart Keyboard). After the final mini-lecture, students reported their general note-taking habits, and final course grades were collected. It was hypothesized that longhand note-taking would have greater benefits for performance within the activity and in the course compared to keyboard note-taking. Because stylus-use mimics components of longhand, stylus note-taking was expected to have similar performance benefits. In addition to these overall patterns, it was expected that students would demonstrate better recall performance when using their preferred note-taking methods. Finally, it was expected that longhand and stylus note-taking could lead to more student engagement compared to keyboard.

Method

Participants

Participants included undergraduate students 18 or older in three sections of Introduction to Psychology at a small public liberal arts institution. The study protocol was approved by the school's Institutional Review Board. As a result of a technology initiative, all students were provided an iPad, a Smart Keyboard, and an Apple Pencil, which they were directed to bring to class. All students participated in the activities as part of course lessons and were given a choice to opt-out, in which case their data was discarded. A total of 97 out of 118 potential students (82%) consented to have their data used for this study. Of those, 75 (77%) were present for all three mini-lectures, 21 (22%) were present for two of the three

lectures, and 1 (1%) was present for only one mini-lecture.

Participants included 59 (61%) women and 38 (39%) men.

Participants ranged in college class, with 30 (31%) being first-year students, 34 (35%) being sophomores, 28 (29%) being juniors, and 5 (5%) being seniors. A total of 80 participants (83%) were European American, 9 (9%) were African American, 3 (3%) were Asian/Pacific Islander, 1 (1%) was Hispanic, and 3 (3%) identified as "other."

Procedure

Three mini-lectures were developed for this study. These lectures were more in-depth perspectives on topics that are covered briefly in the course: social comparison, autism, and attention-deficit/hyperactivity disorder (ADHD). For each topic, a 7-8 slide PowerPoint presentation was presented in class (approximately 10 minutes). Two instructors taught the courses (each taught their own class), and both used the same notes, PowerPoint slides, and other materials. Each mini-lecture was given in a different class period, over two weeks.

During the mini-lecture, participants were asked to take notes using either paper and pen (longhand condition), QWERTY Smart Keyboard and iPad (keyboard condition), or Apple Pencil and iPad (stylus condition). Immediately after the mini-lecture, students were given a quiz to assess recall. Students did not get feedback on their quiz scores or the correct responses. All sections received the topics

in the same order (social comparison, autism, then ADHD). Each class was randomly assigned to start with one of the note-taking conditions; then, all rotated through longhand, keyboard, and stylus. After the final mini-lecture and quiz, participants completed an additional survey.

Materials

In-class Recall Assessment

After each of three mini-lectures, students answered five multiple-choice questions that assessed recall of lecture content; recall was scored as number of correct responses out of five. There were no significant differences in recall scores between the two instructors.

Technology Perspectives Survey

After the final mini-lecture, students completed a survey about technology use. Students were asked, "what strategy do you think helped you remember the material the most?" and "what strategy do you think kept you the most engaged with the class and material?" in reference to the mini-lectures. Response options were paper and pen/pencil, keyboard, or Apple Pencil. Students were also asked, "what method do you normally use for note-taking?" and checked all strategies that applied.

Course Grade

The final grades in Introduction to Psychology were collected at the end of the semester, and grades were on a scale of 0 to 100.

Results

Academic Performance

Recall Performance

A 3 (note-taking strategy: longhand, keyboard, stylus) \times 3 (lecture topic: social comparison, autism, ADHD) independent samples analysis of variance (ANOVA) was used to identify differences in correct responses to the recall quizzes based on note-taking strategy and topic. There were no significant effects for either note-taking strategy, $F(2, 268) = 1.294$, $p = .276$, partial eta squared = .010; topic, $F(2, 268) = 2.365$, $p = .096$, partial eta squared = .018; or a Strategy \times Topic interaction, $F(2, 268) = 1.057$, $p = .378$, partial eta squared = .016. Thus, contrary to hypotheses, there were no overall recall differences for the note-taking strategies immediately after the mini-lecture. Means for each condition ranged from 4.11 to 4.67 out of 5 ($SD = 0.59$ – 1.26 , Table 1).

In addition, to test whether students performed better on the quizzes in their typical note-taking strategies, we tested whether there was a difference in recall performance in the strategies that students preferred (i.e., used regularly in their classes) versus those they did not. These analyses were separated by lecture topic. For social comparison, there was no significant effect, $t(86) = -0.57$, $p = .568$, although students did score higher in their preferred method ($M = 4.50$, $SD = 0.76$) versus non-preferred ($M = 4.41$, $SD = 0.73$), Cohen's $d = .12$. For autism, students scored significantly better in

their preferred method ($M = 4.73$, $SD = 0.45$) compared to their non-preferred method ($M = 4.29$, $SD = 0.89$), $t(84) = -3.01$, $p = .003$, Cohen's $d = .45$ (a moderate effect). For ADHD, there was no significant effect, but there was again a trend for students to do better in their preferred method, with a moderate effect size (preferred $M = 4.39$, $SD = 0.92$, non-preferred $M = 4.08$, $SD = 1.07$), $t(92) = -1.481$, $p = .142$, Cohen's $d = .31$. Thus, although there were no overall effects of strategy, students had better recall when they were asked to use strategies that they regularly used on their own.

Table 1
Descriptive Statistics

	<i>M</i>	<i>SD</i>
Recall quiz topic		
Social comparison	4.45	0.74
Autism	4.55	0.70
ADHD	4.09	1.18
	<i>n</i> (yes)	%
Typical note-taking strategy		
Longhand	38	39%
Keyboard	54	56%
Stylus	58	60%

Note. Students could select multiple typical note-taking strategies. Recall quiz topic *M* and *SD* refer to the mean number correct out of five possible points. ADHD = Attention Deficit/Hyperactivity Disorder.

Perceived Recall

Chi-square tests were used to assess whether any strategy was perceived as more or less likely than chance to help recall in the mini-lecture. Despite the lack of general effect of note-taking on the

recall tests, there was a significant difference in strategies students perceived as helping them recall the mini-lecture material, $\chi^2(2) = 7.75, p = .021$ (Table 2). Pair-wise Chi-square tests were run post hoc to identify strategies that were significantly different. Consistent with expectations, there were no differences in perceived recall between longhand and stylus. In contrast, more students perceived greater recall with stylus compared to keyboard, $\chi^2(1) = 7.81, p = .005$, consistent with expectations. Marginally more students reported better recall with longhand versus keyboard, $\chi^2(1) = 3.63, p = .057$.

Table 2
Chi Square Comparisons of Student Perceptions

	<u>Longhand</u>		<u>Keyboard</u>		<u>Stylus</u>		χ^2	<i>p</i>
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%		
Perceived recall	34	35%	20	21%*	42	44%	7.75	.02
Perceived engagement	37	38%	22	23%*	38	39%	4.97	.08

Note. All responses relate specifically to the mini-lecture demonstration. Asterisk (*) indicates that a group was significantly different from the others ($p < .10$) based on pair-wise Chi square tests.

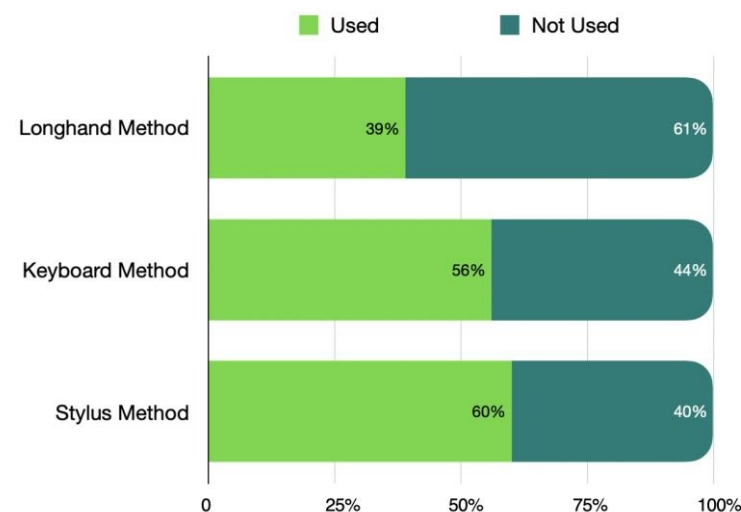
Course Grades

To assess the impacts of note-taking on semester-long course performance, associations between typical note-taking strategies and final course grades were examined. Students selected any note-taking strategies they typically used (not specific to the course, Figure 1). A total of 38 (39%) of students reported using vs. not using longhand, 54 (56%) reported using the keyboard, and 58 (60%) reported using the stylus. Next, the frequency of different combinations of methods was explored. The most common style was stylus alone (22%) or keyboard alone (21%), followed by a combination of keyboard and stylus (17%) or all three (13%). A total of 87% of students reported using some form of technology-assisted note-taking (alone in or in combination with longhand) on a regular basis. Independent samples *t*-tests were used to identify differences in final course grade for students who did versus did not use each strategy (either alone or in combination with other strategies, Figure 2). Consistent with expectations, students who reported regularly using the stylus ($M = 91.68, SD = 10.07$) had significantly higher course grades compared to those who did not use the stylus ($M = 86.84, SD = 13.00$), $t(95) = -2.06, p = .042$, Cohen's $d = .42$. Likewise, students who reported regularly using longhand ($M = 93.41, SD = 8.27$) earned higher grades than those who did not ($M = 87.73, SD = 21.71$), $t(95) = -2.60, p = .011$, Cohen's $d = .57$. There were no significant differences in course grades between students who did

($M = 89.41$, $SD = 11.63$) versus did not ($M = 90.15$, $SD = 11.44$) use the keyboard, $t(95) = -0.31$, $p = .755$, Cohen's $d = .06$.

Figure 1

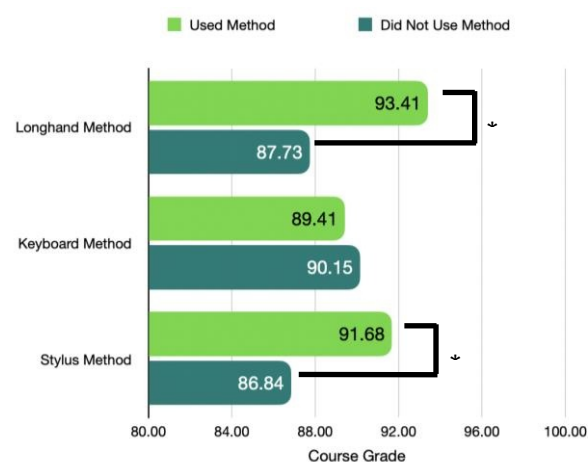
Percent of Students who Reported Using Each Note-taking Method Throughout the Semester



Note. Students were able to select multiple methods.

Figure 2

Course Grades for Students who Did versus Did Not Report Regularly Utilizing Each Note-taking Method



Note. Course grades are out of 100 points. Asterisk (*) indicates significant difference between those who reported using versus not using a particular method.

Perceived Engagement

Chi-square tests were used to identify whether students perceived different note-taking strategies as increasing their class engagement during the mini-lectures. There was a marginally significant difference in strategies students perceived as helping them stay engaged, $\chi^2(2) = 4.97$, $p = .083$ (Table 2). Pairwise comparisons revealed no differences between longhand and stylus, and students reported that they felt more engaged with the stylus, $\chi^2(1) = 4.27$, $p = .039$, and longhand (marginal), $\chi^2(1) = 3.81$, $p = .051$, compared to the keyboard.

Discussion

This study investigated the impact of three note-taking styles on performance and engagement in Introduction to Psychology courses. In the in-class experiment, there was no evidence that one single method led to better overall performance, but students did perform better when using their preferred note-taking methods. In contrast, over the semester, students who used longhand or stylus note-taking versus those who did not use each method performed better in the course. There were also differences in student perceptions that supported this finding, with longhand and stylus versus keyboard note-taking resulting in perceptions of better recall and class engagement during the mini-lecture. Thus, in an Introduction to Psychology class, longhand and stylus note-taking seemed to produce similar advantages over keyboard, although

student preference may influence the effectiveness of various note-taking methods.

Taken together, this evidence suggests the potential for overall benefits of longhand and stylus note-taking in academic performance in the classroom. Although there were no overall differences in mini-lecture recall scores, students who used longhand and stylus had better course grades, and students also perceived that longhand and stylus improved their recall in the mini-lectures. This finding corroborates previous evidence of small but consistent benefits to longhand compared to keyboard note-taking in both lab and classroom settings (e.g., Artz et al., 2020; Morehead et al., 2019; Mueller & Oppenheimer, 2014) and demonstrated similar benefits for stylus. When using longhand or stylus, students use similar muscles and movements to physically write notes. Additionally, because students cannot write fast enough to record content verbatim, they must paraphrase. This promotes deeper processing (Mueller & Oppenheimer, 2014) and may increase the recall of new information compared to other methods of note-taking. Students taking longhand or stylus versus keyboard notes may perceive better recall because they have thought more about the material; therefore, they believe they remember more. Thus, this study extends previous research by suggesting that stylus note-taking may provide benefits similar to

longhand for academic performance. These differences are also reflected in student perceptions.

In addition, this study demonstrated that note-taking style influences student perceptions of class engagement. Taking notes using longhand or stylus may encourage students to think about the material and use deeper processing as they are taking notes (Mueller & Oppenheimer, 2014), thus feeling more connected to the material. Conversely, the current evidence suggests that keyboard note-taking negatively impacted students' perceptions of their engagement. Although previous evidence found widespread non-academic use of technology during class (Ravizza et al., 2016), this study suggests that not all technology has equal impacts on disengagement. This could be because the more rapid note-taking using a keyboard (Luo et al., 2018; Morehead et al., 2019; Van Der Steen, 2017) increased non-academic behavior in a way that stylus note-taking did not. Although students in this study self-reported engagement, previous studies have found correlations between self- and teacher-reported class participation (Carstens et al., 2015). Thus, course grade and student self-report findings suggest some overall benefit to taking notes using longhand or stylus methods.

However, these findings also suggest that there may be substantial benefits to instructors letting students choose the methods that they are most comfortable with. In the more objective outcome of recall scores following the mini-lecture, the only

significant effect was that students performed best when using the note-taking strategies they typically used. This could have to do with familiarity with the method leading to better recall. For example, students who generally use the stylus have more practice and thus may take more effective notes, which benefits their recall. Preferences may also reflect individual differences in learning styles or strategies, such that some students benefit from writing more verbatim notes on a keyboard, while others benefit more from deeper processing using longhand or stylus. Taken together, these findings suggest that while instructors might consider encouraging students to explore using longhand or stylus note-taking, they could do students a disservice by requiring them to use one specific method.

Limitations and Future Directions

Several issues remain for future research. First, there were some basic methodological limitations to this study. The quiz score averages were quite high with little variability, so a ceiling effect may have masked any overall differences in the note-taking method, and a more comprehensive recall test might better identify group differences. In addition, using more complex recall tasks or inserting a delay before recall may amplify differences based on the note-taking method. Finally, because this study manipulated student note-taking within the context of the Introduction to Psychology course, it is possible that this manipulation could have

influenced students' note-taking outside of the experiment and their course performance. Although the study was conducted in the last few weeks of class and the manipulation was minimal, it would be important to replicate the mini-lecture experiment and overall course effects in separate samples.

Future studies could also explore additional questions to add to our understanding of this topic. For example, providing students opportunities to review their notes before testing could help further understand exactly how note-taking may influence the recall process. In addition, the quality and content of notes could be assessed to help understand how different strategies may lead to higher or lower quality notes or different noted content (i.e., verbatim words versus drawings). Nonetheless, this provides an important starting point for further exploration in the role of technology-assisted note-taking in the college classroom.

Conclusions

In conclusion, this study suggests that the stylus may confer similar benefits to longhand note-taking, particularly regarding student perceptions of performance and engagement. However, findings also demonstrate that it is also important for faculty to consider students' personal preferences and experience with various note-taking methods rather than requiring students to use one particular method. Furthermore, it suggests that campuses that offer similar technology initiatives may serve as a prime target for

investigating the impact of technology on learning, as uniform equipment can control for the variability in technology when students are asked to use their own. Although future work is needed to develop better assessments of recall and investigate the content and usage of notes, this study underscores the importance of investigating the stylus as a note-taking tool. These findings suggest that although instructors might encourage their students to try longhand or stylus note-taking, they should also allow students to use the style that best fits their personal preference. They also suggest that classroom technology bans could be detrimental to students who prefer technology-assisted note-taking methods.

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Understanding Writing Center Use among Community College Students

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Author Note

This study was supported by a research grant from the International Writing Centers Association.

Abstract

Student writing center use has been associated with positive academic outcomes, yet less attention has been paid to what, exactly, influences their participation. The researcher surveyed 434 community college students on a range of demographic and academic variables, as well as their level of self-efficacy in writing, to predict their writing center use and non-use. Enrollment in remedial coursework and freshman composition course grade emerged as significant factors. These results may influence how academic support professionals can both accommodate students likely to seek tutoring and promote the writing center as a resource for writers of all levels.

Keywords: Writing centers, community colleges, self-efficacy in writing, student tutoring participation

Introduction

Academic writing is often a source of consternation among undergraduates. It can be an even greater area of concern for the community college student, who may be returning to school after many years in the workforce, the first in the family to attend college, an English language learner, or a student with children or other dependents. Such students often do not have a clear support system to help them navigate the challenges of college-level work, while others may simply lack the confidence to succeed. As a result, these difficulties put students at risk of not completing their degrees. According to the National Student Clearinghouse Research Center, 62% of students who started at two-year public institutions in Fall 2016 persisted to Fall 2017, compared to 83% of students who started at four-year public institutions ("Persistence & Retention – 2018"). The reasons why so many community college students do not persist are varied, and many are unrelated to the college itself, including the student's personal and financial responsibilities outside of school. Such statistics highlight the potential for learning assistance programs, including writing centers, to support students attending community colleges. Writing centers are traditionally promoted as places for students of all ability levels, not just struggling writers, to receive feedback and guidance on assignments (North, 1984). Centers are staffed either by peer tutors who are undergraduate or graduate students, or professional tutors,

who may or may not also serve as classroom faculty. No matter their makeup, writing centers are a common facet of undergraduate academic support. In the latest survey of four-year ($n = 623$) and two-year ($n = 104$) colleges by the National Census of Writing (Gladstein & Fralix, 2017), all respondents reported having a writing center staffed with writing tutors.

Simply because writing centers exist, however, does not mean that students choose to use them. When it comes to tutoring in general, students from both two- and four-year schools appear to underutilize the programs offered by their campuses. According to survey data, 74% of first-year students attending four-year institutions report "never" or "sometimes" seeking help from learning support services, including tutoring, while 63% of community college students report "never" using peer or other tutoring programs (National Survey on Student Engagement [NSSE], 2018; Community College Survey of Student Engagement [CSSE], 2018). Community college students represent a diverse academic population, with many juggling multiple responsibilities at home and at work, in addition to school. In fact, nearly 83% of all students among undergraduates attending public 2-year colleges are considered *nontraditional*, as defined by the U.S. Department of Education, compared to 54% of the student body at public 4-year institutions (Radford et al., 2015).

Beyond the external responsibilities that may impact community college students' decisions to utilize writing centers, their participation may be influenced by their internal perception of their ability to succeed at writing, also known as their level of self-efficacy in writing (SEW). Self-efficacy, as defined by Bandura (2006), refers to an individual's "belief in their capabilities to produce given attainments" in any activity, or domain, in which the individual engages (p. 307). Researchers have measured SEW as both an individual's confidence in their ability to identify and execute mechanical concepts and essay components (McCarthy et al., 1985; Pajares & Valiante, 1999; Shell et al., 1989) as well as the individual's beliefs and attitudes about the writing process (Bruning et al., 2013; Piazza & Siebert, 2008; Schmidt & Alexander, 2012; White & Bruning, 2005; Zimmerman & Bandura, 1994). A student's SEW can be related to their awareness of their level of anxiety about the writing process (Martinez et al., 2011) or be influenced by instructor feedback (Callinan et al., 2018; Ekholm et al., 2015).

Students' perception of the writing center itself is another element to understanding their usage (Gaiamo, 2017). Research suggests there may be a disconnect between students and tutors regarding the mission of the writing center. For example, while students mainly focus on specific assignments and course grades, tutors are more concerned with developing students as writers (Missakian, 2015; Morrison & Nadeau, 2003). Bridging the gap

between the student's and tutor's expectations for the writing center is one of the greatest challenges writing center administrators face when promoting the short- and long-term benefits of writing center tutoring (Boughy, 2012; Gordon, 2008; Missakian, 2015; Morrison & Nadeau, 2003).

This article describes research conducted to determine the factors that significantly predict writing center use and non-use among community college students. There is evidence to suggest that utilizing the writing center, or another academic tutoring service, improves outcomes for college students (Coladarci et al., 2013; Cooper, 2010; Pfrenger et al., 2017; Rheinheimer et al., 2010; Vick et al., 2015); however, while research about writing centers and other tutoring programs focuses mainly on their impacts, there is little that explores why students, particularly those enrolled at community colleges, seek writing center tutoring. While students' perception of their writing skills, or of the writing center itself, may influence their writing center use, other variables may play a significant role, specifically, students' demographics or academic history (Salem, 2016). Knowing more about the reasons why students decide to take advantage of writing center services, or not, may help colleges customize their programs to increase utilization.

Methods

Participants

This study examined participant data collected at the beginning of the spring 2020 semester from students attending a public suburban community college that is part of a larger, multi-campus institution with a total enrollment of approximately 23,000 students. When the research was conducted, the enrollment of the campus under study was approximately 8,000 students, with approximately one-third considered full-time. Females represent 56% of all students. The population is 37% White, non-Hispanic, 27% Hispanic, 22% of unknown ethnicity, 12% Black, non-Hispanic, and 4% Asian or Pacific Islander. Most students are aged 24 and below, with approximately 26% of students aged 25 and older. The most common degree among campus graduates is an Associate in Arts (A.A.) from the program in Liberal Arts and Sciences – General Studies Emphasis, followed by an Associate in Applied Science (A.A.S.) in Nursing.

The writing center is located within the academic tutoring wing of the campus library, considered to be the heart of campus. At the time the study was conducted, the center was open for appointments and walk-in visits Monday through Saturday, with online tutoring offered on Sunday. Tutors are available to assist students with writing assignments from any course or subject area, as well as with resumes, cover letters, and essays for scholarship

applications. Tutors are paid professionals who possess at least a master's degree in English, creative writing, or education. The center does not employ peer tutors.

Participants were selected based on their enrollment in Introduction to Literature (ENG 102), a course required by virtually all programs at the college. This was done to ensure that students from a variety of disciplines were represented in the participant sample. Students take the course after completing a freshman composition course, either Standard Freshman Composition (ENG 101) or Enhanced Freshman Composition (ENG 100); therefore, most participants have been enrolled at the college for at least two semesters and have completed at least one writing course. Faculty were asked to participate in the study by allowing the survey to be distributed to their students 5-10 minutes before their classes began. Students were informed that their participation was voluntary, and all participants were given a choice to opt out. Students enrolled in 20 different sections of ENG 102 (18 in-person, two online) participated in the study. Participants in online sections were given the option to include additional comments about their reasons for their writing center use or non-use. Out of 579 possible participants, 434 students submitted surveys, a response rate of 74.96%.

Variables

Self-Efficacy in Writing (SEW)

Participants completed the Post-Secondary Writerly Self-Efficacy Scale (PSWSES) developed by Schmidt and Alexander (2012). While most college tutoring assessment uses student achievement, such as GPA (Bredtmann et al., 2013; Cooper, 2010; Fauria & Fuller, 2015; Rheinheimer et al., 2010; Walvoord & Pleitz, 2016) and persistence (Bell & Frost, 2012; Coladarci et al., 2013; Rheinheimer et al., 2010; Vick et al., 2015) to measure program effectiveness, the aim of the PSWSES is to understand student progress based on their evolving attitudes about writing. The scale measures 20 items of self-efficacy in three separate areas that are characteristic of a writer: local and global writing process knowledge (e.g., "I can identify incomplete, or fragment, sentences"), physical reaction (e.g., "I can write a paper without feeling physical discomfort"), and time/effort (e.g., "I can invest a great deal of time and effort when writing a paper when I know the paper will earn a grade"). Following testing for consistency and reliability, the published Cronbach's Alpha for the scale was .931. For the present study, participants rated each item on a Likert scale from 1 (*never*) to 6 (*always*), for a possible total score range of 20 – 120. Cutoff scores indicating the participant's level of SEW are based on quartiles.

Nontraditional Status

Students were considered "nontraditional" if they met at least one of the seven characteristics that categorize nontraditional students, according to the National Center for Education Statistics (2015). Each description was coded as a binomial variable (no/yes).

Awareness of the Writing Center

Students identified whether they were aware of the college's writing center. Responses were coded as a binomial variable (no/yes). Students were also asked to identify how they became aware of the writing center. Responses were coded into seven categories (0 = college tour, 1 = friend or classmate, 2 = professor, 3 = college counselor, 4 = college website, 5 = flyer or other advertising, 6 = other – please fill in).

Writing Center Use

If students selected that they were aware of the writing center, they were asked to self-report the number of times they have used the college's writing center for help with writing since they have been enrolled at the college. Students were given the option to circle a figure between 0 and 10+. Their responses were coded as both a continuous variable and a binomial variable (0 = have not used the writing center, 1 = have used the writing center).

Repeat Visits. Students who had used the writing center at least once were asked if they would return. Their responses were coded as a binomial variable (no/yes).

Reasons for Non-use. If students had not visited the writing center, they were asked to identify all the reasons why they had not. Responses were coded into 10 categories (0 = I do not need help with my writing, 1 = I am afraid to share my writing with a tutor, 2 = I prefer to get writing help from another source, 3 = I do not know what a writing center does, 4 = I am too busy to visit the writing center, 5 = I do not know where the writing center is located on campus, 6 = the writing center is not conveniently located for me, 7 = the hours of the writing center are not convenient for me, 8 = I only learned about the writing center this semester, 9 = other – please fill in).

ENG100 or ENG101 Grade

Participants were asked to self-report the grade they earned in their freshman composition course. Responses were coded based on the letter grade reported. To consolidate categories, half grades were converted to whole grades (for example, both a B and a B+ were considered a B).

Remedial Coursework

Participants self-reported whether they have taken remedial (also known as *developmental*) English courses at the college. Responses were coded as a binomial variable (no/yes).

First-Generation College Student Status

Students were considered first-generation college students if they reported that neither of their parents had attended some

college, as defined by the National Center for Education Statistics (Cataldi et al., 2018). Responses were coded as a binomial variable (no/yes).

Additional Covariates

Participants self-reported their gender identity, age, race/ethnicity, degree program, ESL coursework, and college GPA.

Data Collection Procedures

Responses were gathered during two weeks in February 2020. For the 18 in-person sections, the researcher began distributing the paper surveys 5-10 minutes before the start of each ENG 102 class. Faculty were asked to leave the room while students completed the survey. All students were notified that, if they chose to participate, their responses would have no bearing on their course grade, were confidential, and would in no way be shared with their professor. In most cases, the researcher administered the survey. When the researcher was not available to do so, a faculty member not affiliated with the course administered the survey by following a script provided by the researcher. Participants enrolled in online sections of ENG 102 completed an online version of the survey using Qualtrics.

Data Analysis Procedures

Once the researcher collected the completed surveys, all variables were entered into SPSS version 26 for statistical analysis. Initial correlation tests were run to reveal any relationships between

variables. Frequency tables were also computed for means and standard deviations of all variables. Significance for all results of the study were set at the $p < .05$ level, indicating that there will be less than a 5% chance of outcomes occurring randomly.

Results

This study examined survey data from 434 students enrolled across 20 sections of a second-semester English course. Participants from 18 sections were taught traditionally, or face-to-face ($n = 409$), and participants from two sections were taught online ($n = 25$). The dependent variable of writing center use was transformed to binomial scores (no/yes) to fit a logistic regression, which was performed to test the research question as to which independent variables most predicted writing center use.

Descriptive Statistics

Of the participants who responded to the gender item ($n = 432$), 59% identified as female and 39.6% identified as male. Of participants who reported their age ($n = 406$), the average was 20.6 years. Of the participants who responded to the item about their parents' educational history ($n = 432$), 46.8% were considered first-generation college students. Of the participants who responded to the items about nontraditional student characteristics ($n = 427$), 53.6% were considered nontraditional students. Of participants who reported their college GPA ($n = 342$), the average was 3.19. Of participants who responded to the item about remedial coursework ($n = 431$), 26.5% indicated that they had taken at least one remedial

course. Of participants who responded to the item about ESL coursework ($n = 418$), 3.5% reported they had taken at least one ESL course. Of participants who responded to the item about degree program ($n = 431$), the most common was an A.A. (64%), followed by 36% of participants who were enrolled in either an Associate in Science (A.S.) or an A.A.S. program.

Of participants who responded to the item about race/ethnicity ($n = 433$), most identified as either Hispanic/Latino or White. See Table 1 for a description of participants by their self-identified race/ethnicity.

Table 1
Demographics of Study Sample by Race/Ethnicity

	N	%
Hispanic/Latino	189	43.6
White	169	39.0
Black or African American	47	10.9
Other/Prefer Not to Respond	16	3.7
Asian	12	2.8
Total	433	100.0

Of participants who responded to the item about writing center use ($n = 433$), 73.5% reported never using the writing center ($n = 318$). The most common reason students cited was that they were too busy to use the writing center, followed by the belief that they do not need help with writing. The complete list of reasons

participants selected for not using the writing center is reported in Table 2, ranked in order of selection frequency.

Table 2
Responses to Survey Question 5: If You Have NOT Visited the Writing Center, Why Not?

	N	%
I am too busy	132	30.9
I do not need help with my writing	98	23.0
I prefer to get writing help from another source	48	11.2
I am afraid to share my writing with a tutor	35	8.2
The hours of the writing center are not convenient for me	33	7.7
I do not know where the writing center is located	26	6.1
I do not know what the writing center does	19	4.5
Other – please fill in	18	4.2
I only learned about the writing center this semester	17	4.0
The location of the writing center is not convenient for me	1	0.2
Total	427	99.0

Among online participants, who were given the option to include additional information about their writing center use ($n = 25$), 14 shared why they have not used the writing center. Some responses included: "I have not attended the college writing center because I have become extremely busy with a part-time retail job and part-time photography job as well as being a full-time student,"

"Going to the writing center just isn't something I think about doing when assigned a paper," "Writing assignments are not complicated for me," and "The only course I took that involved the writing center was ENG 101. All the papers I wrote received a grade of B+ or better. I didn't feel I needed assistance on any of my papers for this course."

Of participants who responded to the item about writing center awareness ($n = 433$), 88.7% reported that they were aware of the writing center ($n = 385$). Participants were most frequently made aware of the writing center by their professor, followed by a college orientation or tour. How participants became aware of the writing center are reported in Table 3.

Table 3
Responses to Survey Question 2: How Did You Hear About the Writing Center?

	N	%
Professor	211	54.8
College Orientation/ Tour	127	33.0
College Counselor	17	4.4
Friend or Classmate	13	3.4
College Website	9	2.3
Other Type of Advertising	8	2.1
Total	385	100.0

Among participants aware of the writing center, the average number of visits was .855, with 94.7% of users reporting that they would return. The highest average number of visits to the writing

center came from participants who had enrolled in ESL coursework ($M = 2.53$, $SD = .899$), participants who had enrolled in remedial coursework ($M = 1.10$, $SD = .209$), and participants who earned a B+/B in their freshman composition course ($M = .958$, $SD = 1.96$). The lowest average number of writing center visits came from participants who earned an A in their freshman composition course ($M = .584$, $SD = 1.75$), participants who were not first-generation college students ($M = .613$, $SD = .112$), and participants who had not enrolled in remedial coursework ($M = .644$, $SD = .087$). The means and standard deviations of the participants' average number of writing center visits for various independent variables may be found in Table 4.

Among online survey participants who used the writing center, four included additional information about their choice to do so. Responses included: "Before handing in your research paper, you can stop by and get a glance of how you might be graded," "Knowing that I had not been in school for a long time I knew that [...] my skills needed some touching up," and "The confidence I gained in my writing from going to the writing center will be instilled in me forever [...] The writing center, for me, is like a safe place. Somewhere I can go when I want to express my feelings on paper."

Table 4*Means and Standard Deviations on Writing Center Visits for All Variables, by Group*

Covariates and DVs		Mean	Standard Deviation	N
Student Type	Traditional	.697	.131	198
	Nontraditional	.823	.111	232
First Gen. Student	No	.613	.112	230
	Yes	.931	.128	202
Remedial Coursework	Some Remedial Courses	1.10	.209	114
	No Remedial Courses	.644	.087	317
ESL Coursework	Some ESL Courses	2.53	.899	15
	No ESL Courses	.697	.080	418
Degree Type	AS/AAS	.826	.112	156
	AA	.654	.128	275
ENG100 or ENG101 Grade	A	.584	1.75	166
	B+/B	.958	1.96	190
	C+/C	.667	1.14	57
	D+/D	.692	1.03	13
Gender	Male	.669	1.55	172
	Female	.828	1.90	256
	Other	.000		1
	Prefer Not to Answer	.667	1.15	3

Research Question

To examine which factors predict writing center use among community college students, logistic regression was performed using writer center use as a binary variable (no/yes). The preliminary analysis fit a model including SEW, age, ENG100 or ENG101 grade, remedial coursework, nontraditional characteristics, and first-generation college student status as predictor variables. These variables were selected based on an overall absence of research examining their relationship to the dependent variable of

writing center use. Based on this analysis, a total of 360 cases were analyzed. The Hosmer-Lemshow Goodness of Fit test was not significant, indicating that the model was good and adequately fit the data. In this analysis, only two variables, ENG100 or ENG101 grade and remedial coursework, demonstrated to be significant predictors of writing center use (omnibus chi-square = 25.21, $df = 6$, $p < .01$), which accounted for between 6.8% and 10.0% of the variance in writing center use. Among those who did not use the writing center, 96.6% were correctly predicted, while 10.9% of those who did use the writing center were correctly predicted. Overall, 74.7% of predictions were accurate.

A second analysis was conducted with the non-significant variables from the preliminary analysis removed. In this model, only ENG100 or ENG101 grade and remedial coursework were entered as predictor variables. Based on this second analysis, 426 cases were analyzed. The Hosmer-Lemshow Goodness of Fit test was not significant, indicating that the model was good and adequately fit the data. ENG100 or ENG101 grade and remedial coursework again demonstrated a significant prediction of writing center use (omnibus chi-square = 16.02, $df = 2$, $p < .01$), which accounted for between 3.7% and 5.4% of the variance in writing center use. Among those who did not use the writing center, 97.8% were correctly predicted, while 3.6% of those who did use the writing center were correctly predicted. Overall, 73.9% of

predictions were accurate. Table 5 shows that the variables ENG100 or ENG101 grade and remedial coursework were significant, $p < .05$, as a predictor of writing center use. The value of the coefficient reveals that ENG100 or ENG101 grade increases the odds for writing center use by a factor of 0.62 (95% confidence interval 0.47-0.82), and remedial coursework increases the odds for writing center use by a factor of 1.53 (95% confidence interval 1.02-2.30). The negative coefficient for ENG100 or ENG101 grade indicates that the odds of writing center use declines as the student's grade increases.

Table 5
Second Logistic Regression to Determine the Variables that Predict Writing Center Use

	B	S.E.	Wald.	df	Sig.	Exp (B)	95% C.I. for EXP (B)
Step 1							
ENG100 or ENG101 Grade	-.472	0.104	11.31	1	.001	0.62	0.47-0.82
Remedial Coursework	.428	0.207	4.28	1	.039	1.53	1.02-2.30
Constant	.301	0.451	0.45	1	.504	5	

In summary, logistic regression revealed that the freshman composition course grade was a significant predictor of writing center use. More specifically, the lower students' ENG 100 or ENG 101 grades were, the more likely they were to use the writing center. The logistic regression also revealed that students' enrollment in remedial English coursework was a significant predictor of their

writing center use; if students were enrolled in a remedial English course, they were more likely to use the writing center.

Discussion

The finding that students' writing center use increases as their ENG 100 or ENG 101 grade decreases may be explained by two similar possibilities. First, students and faculty may perceive the writing center as a service reserved mainly for struggling writers. While it remains unclear in this study if faculty only promoted the writing center to struggling students, this interpretation is in line with similar findings from studies that describe a disconnect between writing center administrators, who promote the center as one that supports writers of all abilities and at all levels, and students and faculty, who view it as a place where students go when they need to "correct" something they did "wrong" (Giaimo, 2017; Missakian, 2015; Morrison & Nadeau, 2003). Suppose faculty only recommend the writing center when students have difficulty, rather than promote it as a space for all writers. In that case, they may perpetuate the perception of the writing center as mainly a corrective or punitive space, thereby missing an opportunity to normalize collaboration and feedback as part of any authentic writing process.

Moreover, professors often incentivize writing center use to students through extra points on assignments. Therefore, students who use the writing center may be striving to increase their course

grades by obtaining such extra credit. This theory supports outside findings that external motivators, such as extra credit, are one of the most cited reasons for students to spend additional time on assignments (Bender, 2007; Fukuda & Yoshida, 2013). This is also supported by qualitative research on working-class student experiences in writing centers conducted by Denny et al. (2018) who concluded that these students prefer a more direct assessment of their writing with the particular purpose of improving a grade, and not necessarily with improving their writing ability over the long term.

Several variables were not found to significantly predict writing center use, most notably, SEW and nontraditional student status. The finding about SEW is in line with an overall absence of research to support the notion that a student's SEW is a significant factor in their choice to use a writing center or other tutoring service; however, recent studies have found relationships between self-efficacy and self-regulation (Ekholm et al., 2015) and between self-efficacy and writing performance (Prat-Sala & Redford, 2010). Additionally, students who possessed nontraditional characteristics were not significantly more or less likely to use the writing center in this study. In fact, nontraditional students were found to visit the writing center in greater numbers than traditional students, on average. This result is contrary to the findings of some qualitative research about nontraditional students, which describe them as less

engaged in the campus community and less likely to participate in enrichment activities than their traditional counterparts (Goncalves & Trunk, 2014; Norman et al., 2015). One possible explanation for the discrepancy between these findings is that, in the current study, all participants were enrolled in a second-semester English course, which tacitly demonstrates their ability to navigate college life successfully thus far. This characteristic of the participant sample may have mitigated any influence nontraditional characteristics might have had on writing center use.

Limitations

The main threat to validity in this study is that the use of self-reported data in survey research may be unreliable. For example, students may not have been truthful about their writing center use and/or may have inaccurately reported their ENG 100 or ENG 101 grades due to misremembering or not remembering them. This limitation supports work by Morrison and Nadeau (2003), who discuss students' inability to accurately recall grades they received in classes they completed as recently as a semester prior.

Implications and Recommendations for Future Research

Results from this study have broad implications for how writing center stakeholders promote their services to students and how writing center services are understood by the larger campus community.

Writing Center Administrators

First, writing center administrators can work with faculty to identify students who are most likely to use the writing center and strive to make the writing center as accessible to these students as possible to increase their participation. This can be achieved by surveying struggling students to determine the factors that would make writing center tutoring most convenient for them. In addition, based on this study, most students who used the writing center reported that they would use the writing center again. In light of this finding, writing center administrators should consider creating promotional materials based on positive testimonials from students who have used the writing center.

In addition to focusing on the students who are most likely to use the writing center, writing center administrators can reach out to new student populations beyond those enrolled in introductory English and composition courses. The finding that low freshman composition course grades increase the likelihood of writing center participation may perpetuate the notion that writing centers are designed to only help students with their English courses. Writing center administrators can work toward changing this belief by working with professors in all subject areas to encourage students to participate in writing center tutoring. In this study, students most frequently learned of the writing center through their course

professors, underscoring the crucial role classroom faculty can play in increasing writing center usage.

Writing center administrators should further identify and investigate variables that predict writing center use that were not covered by this study. For example, the researcher did not include items related to socioeconomic status, academic history pre-college, or future academic or career planning in the survey. These variables may clarify significant differences between users and non-users. Future research might also specifically investigate students who achieve As and Bs in their freshman composition class, with writing center administrators obtaining survey data from high-achieving students who use the writing center. This may help to inform how writing conferences can best be tailored to students' needs.

Writing Center Tutors

The finding that students' freshman composition course grade and/or enrollment in remedial coursework significantly predicts their writing center use is important for tutors working on the front lines of the writing center. It may be helpful for tutors to understand that the students they serve likely have struggled with writing throughout college, not solely on a particular assignment. Tutors can play a role in both helping students with their immediate need to improve their score on a single task as well as providing students with the tools and strategies to succeed on future writing assignments. This presents an opportunity for tutors to serve as

coaches to foster and build confidence, as well as experts who can model and demystify various aspects of the writing process, methods supported by Boughey (2012) and Shamoon and Burns (1995) who advocate for an expert/apprentice model of writing center instruction. Future research should examine the student-tutor relationship as a factor that may influence repeat writing center use, building on the work of DeCheck (2012) and Mackiewicz et al. (2013). Such research could also explore how the kinds of tutors a writing center employs (peer, professional, or a mix of both) impact student writing center perception, use, and/or satisfaction.

Writing Center Research

For writing center researchers, this study contains several implications for the field of inquiry, as it furthers the use of RAD (replicable, aggregable, and data-supported) methods in writing center research that has been described by Driscoll and Perdue (2014) and Nordstrom (2015). In particular, this study builds upon the work of Salem (2016) for both its use of inferential statistics to examine writing center usage as well as its analysis of a sample size large enough to include many writing center non-users ($n = 319$), rather than exclusively studying the characteristics of students who already use the center. Researchers can continue to examine the role that students' perception of the writing center plays in writing center usage by questioning students on their impressions of the writing center and its mission, building on research conducted by

Gaiimo (2017). Future quantitative writing center research designs should continue to strive for comparably large sample sizes so that results have the potential to be generalized to similar populations, as advocated by Haswell (2005).

Finally, additional scholarship is needed to better understand differences in tutoring modalities, such as in-person, online, synchronous, asynchronous, or any combination thereof, on student attitudes and achievement. Shortly after this research was conducted, most college writing centers, including the one in this study, shifted to an exclusively online tutoring model due to the COVID-19 pandemic. More research is needed to examine the impact the switch to online tutoring has had on students' perceptions of the writing center and their decisions to use it.

Conclusion

The benefits of tutoring on college student achievement are well-documented; however, little has been understood about student participation in writing center tutoring. In this study, the grade students earned in their freshman composition course and their enrollment in remedial courses were the variables that predicted writing center use among participants attending a community college. One student's explanation for why she used the writing center illustrates this study's main finding. "I decided to attend the writing center because I was in danger of failing my English class, and my professor recommended it," she wrote. This response

suggests that students perceive the writing center as a place that can help them if they are struggling. Writing centers inhabit a unique position in the academic landscape; they are places that can engage students in the course material, improve academic outcomes, foster students' confidence, and provide students with focused, one-on-one instruction. Because writing center services are typically offered as a benefit included in tuition, colleges have an interest in continuing to study specific reasons why students may (or may not) take advantage of such valuable help.

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Why We Will Not Return to Exclusively Face-to-Face Tutoring Post-COVID: Improving Student Engagement Through Technology

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Abstract

Online peer tutoring provided crucial social and academic engagement opportunities for students and peer tutors during COVID-19. This article describes our institution's transition to fully online academic support services and discusses their impact on student learning and retention. While the total number of unique students utilizing tutoring and supplemental instruction decreased slightly during pandemic-induced remote learning, the students who used these services generally made more online visits per person than students who took advantage of in-person tutoring before the pandemic. Although transitioning fully to online tutoring was not without difficulties, we have seen evidence of improved engagement among students and tutors made possible by some of the virtual processes we have put in place. In this article, we discuss these findings in terms of high-impact educational practices and

consider what comes next with online tutoring and student engagement as we return to largely face-to-face classes and student support programs for the fall.

Introduction

In a recent special issue of *The Learning Assistance Review*, learning center leaders from a broad range of higher education institutions shared how they adapted and innovated to provide student academic support services remotely during COVID-19. Some of the authors represented institutions with significant online infrastructure, which enabled a relatively smooth transition to fully remote operation. In contrast, others came from institutions with much fewer online resources and had to hold their centers together through sheer force of will. Yet, regardless of the type and size of the institution, the learning center professionals devised new ways to reach students and support their university communities. The lessons they learned are stories of agility and resilience in the face of an unprecedented public health crisis.

Although the pandemic forced higher education institutions to pivot to remote teaching and learning within a matter of days, online education is by no means a new phenomenon. Colleges and universities have seen steady growth in enrollments in online courses over the last two to three decades. More than a third of higher education students in the United States now take at least one online course. In fall 2018, more than 6.9 million students (or 35% of

the total 19.6 million higher education students) enrolled in any distance education courses at degree-granting postsecondary institutions in the United States (National Center for Education Statistics, n.d.). Students are not only enrolled in online courses but are also participating in a wide range of web-based academic and student services (Meyer, 2014). Therefore, finding ways for students to become and stay engaged through web-based student support services is more important than ever. Even for students completing most of their programs in person, web-based academic and student services can provide them with flexibility and benefits that may not be possible through exclusively on-campus student services. This article discusses one web-based student service, namely online tutoring at the University of Maryland, Baltimore County (UMBC).

Helping students to engage meaningfully with online learning has been a major challenge for higher education institutions during COVID-19. Students have reported having difficulty with: (1) explicit technology issues, (2) attempts to use technology that failed, and (3) poor pedagogical choices and course management practices (Brooks, 2021). In addition, student participation in academic support services has declined dramatically during pandemic-induced remote learning (See, for example, Sorrells & Wittmer, 2020). At UMBC, while the total number of unique students utilizing tutoring and supplemental instruction decreased slightly during remote learning, the students who used these online services

made more online visits per person than students who took advantage of in-person tutoring before the pandemic. Although transitioning fully to online tutoring was not without difficulties, we have seen evidence of improved engagement among students and tutors made possible by some of the virtual processes we have put in place. This article will discuss these findings in terms of high-impact educational practices and consider what comes next with online tutoring and student engagement as we return to largely face-to-face classes and student support programs for the fall. There are important benefits for tutors and tutees from online tutoring that we want to build on, which is why we will not go back to providing exclusively face-to-face tutoring.

Student Engagement and Student Success

A large body of research has shown that engagement in academic activities is strongly linked with student success. According to the Cooperative Institutional Research Program (CIRP), a survey that has been administered to over 15 million incoming college students at over 1,900 institutions over 50 years, the more time and effort students spend actively engaged in academic activities, the more they learn (See also, Astin, 1993). Furthermore, many studies have shown that students' formal and informal interactions with peers and faculty reinforce their integration into the college community, leading to higher degree completion rates (Pascarella & Terenzini, 2005; Tinto, 1993). In

addition, results from the National Survey of Student Engagement (NSSE) have shown that collaborative and active learning promotes student success (Kuh et al., 2006).

As part of a national effort to reform undergraduate education, the American Association of Colleges and Universities (AAC&U) has identified a set of "high-impact educational practices" that may help students engage academically and connect with faculty and peers, including first-year seminars, learning communities, undergraduate research opportunities, service learning, internships and capstone projects in the senior year, practices which require students to integrate knowledge and methods of analysis from several fields of inquiry to explore a real-world problem (Kuh, 2008). "High-impact practices" have also been shown to promote deep learning of content and personal and social development that prepare students well for life beyond college in an increasingly complex and interdependent world (Bok, 2020; Finley & McNair, 2009; Kilgo et al., 2015). Given these positive findings, it is no wonder that many colleges and universities have integrated these practices into their curriculum. The annual National Survey of Student Engagement (NSSE), which collects information from hundreds of colleges and universities annually, found that from 2015 to 2020, almost 60% of seniors had completed at least two "high-impact practices" (NSSE, 2021).

It is important to note that the term “high-impact practices” refers to course formats, such as first-year seminars and capstone projects, and out-of-classroom experiences such as service-learning and research. As Kuh & O’Donnell (2013) point out, high-impact practices share several key qualities, including high instructor expectations, a significant investment of time by students, substantive interactions with peers/faculty, exposure to new experiences with diversity, ongoing and constructive feedback, reflective and integrative learning, real-world applications of learning, and public demonstration of learning. Because many of these qualities are present in peer-assisted learning experiences, we argue that tutoring and supplemental instruction should be considered another form of high-impact practice.

A great deal of research has shown that peer tutoring has a positive impact on student learning and persistence (Arco-Tirado et al., 2011; Bettens et al., 2018; Colver & Fry, 2016; Cooper, 2010; Garcia et al., 2014; Hendriksen et al., 2005; Munley et al., 2010). The benefits of supplemental instruction are shown even controlling for students’ prior academic achievement (Bowles et al., 2008; Buchanan et al., 2019; Dawson et al., 2014; Hongtao et al., 2018; van der Meer et al., 2017). But what makes peer tutoring and supplemental instruction so effective? Wilcox & Jacob point out that one of the key components of supplemental instruction is “[providing students] with a structure where they could talk to and

teach each other” (2008, p. viii). Tutors and supplemental instruction leaders coach students on how to learn, providing constructive feedback, and helping students engage with the course material outside of class (Merrill et al., 1995). Because students reflect on their learning and demonstrate what they know to each other, peer tutoring and supplemental instruction provide many of the academic benefits of other high-impact practices and are especially helpful for students who need academic support. The more students engage in educationally purposeful activities, the larger the improvement in their grades, persistence, and graduation rates (Kuh et al., 2006).

Supplemental instruction is a collaborative and interactive learning process at its core, allowing space for discussion of course content and application of learning strategies in a group (Hurley & Gilbert, 2008). Peer tutoring promotes social interaction that leads to co-construction of knowledge and active engagement with course content (Budhai & Brown Skipwith, 2017; Falchikov, 2003). In addition, peer tutors and supplemental instruction leaders, who are also students themselves, benefit from this social engagement, refining their content knowledge, communication, and leadership skills (Stout & McDaniel, 2006).

Many of the benefits of learning assistance translate to online tutoring as well. For instance, college students who had access to online algebra tutoring learned more content and had higher

persistence rates than students who attended only face-to-face tutoring (Kersaint et al., 2011). A study comparing online vs. face-to-face supplemental instruction showed that students in both modalities found their tutoring sessions helpful and experienced similar positive effects on their final course grades (Hizer et al., 2017). Furthermore, online tutoring has been shown to increase students' agency in their education (Al Chibani, 2014) and help them commit to learning outside of class in a supportive environment (Herrera Bohórquez et al., 2019). These specific advantages of online tutoring gave us confidence that moving our academic support services online would provide important benefits to students needing academic and social engagement during COVID-19.

Adapting to COVID-19 through Online Student Support

The Academic Success Center provides academic support to all undergraduate students attending UMBC, a public research institution with an undergraduate population in fall 2020 of 10,932 (UMBC, 2021). Before the switch to remote learning in March 2020, almost all student support services at UMBC were offered face-to-face, with students meeting tutors and staff at the Academic Success Center. Students in all 1st and 2nd-year courses and many upper-level courses across all majors and disciplines were tutored in groups led by trained peer tutors, both on a drop-in basis and by appointment. Students made tutoring appointments using our

online tutor scheduling system and met with their tutors in groups of up to 4 students. The Academic Success Center also offered Supplemental Instruction Peer-Assisted Study Sessions (SI PASS), which provided regularly scheduled, out-of-class review sessions for traditionally difficult courses. These sessions allowed students to compare notes, discuss readings, develop organizational tools, and predict test items. In addition, we provided individual appointments with students focusing on academic policy and academic success skills, and our Academic Advocates connected students to university resources that helped enhance their persistence, progression, and degree completion. The Academic Success Center also coordinated early academic alerts and placement testing. Students could access our services in our main office and in the campus library, and make appointments with content tutors, to meet with a Writing Center Tutor for any writing assignment for any course, or drop in at the Math and Science Tutoring Center with questions in math, statistics, biology, chemistry, physics, and economics. These in-person services were widely utilized, helped in part by faculty who routinely referred their students to these services.

Like many campuses, we pivoted quickly to online learning in March 2020. While UMBC's Instructional Technology team trained faculty on effective online teaching strategies, a cross-campus planning team developed a one-stop website **covid19.umbc.edu**

where faculty, staff, and students could access online learning and academic support and campus services. The Academic Success Center was a key contributor to these resources, building videos, guides, and online modules to support online learning and online engagement. We positioned ourselves as a single point of contact for undergraduate student inquiries, directing students to tutoring and academic support. This was motivated by student responses to a wellness check survey administered by the Division of Student Affairs early on during COVID-19. Students reported difficulties with making connections and sought more opportunities to study together and connect socially with other students. Thus, we began to market our Academic Success Center services as an easy way to access academic engagement and social interactions with peers. When our campus closed for spring break in March 2020, the Academic Success Center staff prepared to offer our services fully remotely. We determined the online technologies that would best serve our students, trained our 150 tutors and SI PASS Leaders on how to use the technology, and switched all the scheduling systems from physical rooms to virtual rooms with links where students could easily access their tutors. Finding and retaining tutors was a significant struggle during COVID-19, as our tutors and SI PASS Leaders were students too and were dealing with the stresses of the pandemic in their academic and personal lives.

Despite the difficulties, we offered Content Tutoring and SI PASS Sessions throughout the spring and summer of 2020 and strengthened our asynchronous and synchronous online training for tutors and SI PASS Leaders during the slower summer months. While the tutors had often reviewed material before trainings even before COVID-19, moving more of the content to asynchronous modules in Blackboard during the pandemic allowed us to devote more time during the synchronous training meetings to building community among the tutors and simulating tutoring and SI PASS mock sessions and scenarios. This flipped-classroom approach to training has been well received by our tutors and SI PASS Leaders. Moreover, providing the training using the same technology where the tutors would meet their students later (e.g., Goboard, Google Meet, Jamboard, Blackboard Collaborate) allowed tutors to practice with the technology and learn how it felt both as a tutor and as a tutee.

Building on the lessons learned from spring and summer online tutoring, we re-opened our virtual drop-in math tutoring in the fall, along with a virtual tutoring help desk, where student staff helped students find and access online tutoring services. We also built a new virtual drop-in tutoring program, the Computing Success Center, in collaboration with the Department of Computer Science and Electrical Engineering. Students could click on links on our website, which launched a virtual space where tutors were waiting

to help students with computer programming questions. In the spring of 2021, we extended drop-in tutoring to more science courses, and additional departments and colleges have partnered with us to provide drop-in academic support for their courses. We attribute our success with launching new online tutoring programs relatively quickly during COVID-19 to relationships based on trust and collaboration that we have cultivated with various academic units over the years.

Effects of Online Support

Many institutions experienced dramatic declines in student utilization of tutoring services during COVID-19. At UMBC, while the total number of individual students using online tutoring and supplemental instruction decreased slightly compared to the previous in-person tutoring usage, the students who utilized online academic support during the pandemic made more online visits per person than did students utilizing in-person academic support before 2020. As can be seen in Table 1, students on average made more visits in fall 2020 than they did in fall 2019 for both content tutoring and SI PASS. For content tutoring, there were 5.77 visits per student in fall 2020 compared to 4.86 visits per student in fall 2019, while there were 7.64 visits per student in fall 2020 compared to 6.35 visits per student in fall 2019 for SI PASS. We believe that students took more advantage of academic support during COVID-19 due to recommendations from faculty, our direct outreach to

students in the courses, and the convenience of accessing these services either in the course learning management system (SI PASS sessions were offered in the same Blackboard Collaborate virtual space as course lectures) or via a link students could access easily on our website. In a post-semester survey, we asked students enrolled in SI PASS-supported courses who did not attend SI PASS sessions about the different reasons why they chose not to attend (multiple responses were allowed): 50.27% (92/183) indicated that they wanted to attend but had scheduling conflicts. While we do not have similar data for content tutoring, we infer that even more students wanted to attend academic support than did participate, limited by their multiple responsibilities during COVID-19.

Table 1

Numbers of Visit Hours and Unique Students Using Academic Success Center Services - Online Fall 2020 vs. In-Person Fall 2019

ASC Service	Term	Visits	Students	Avg. # of Visits per Student	% of No Shows
Online Content Tutoring	Fall 2020	2067	358	5.77	12.95%
In-Person Content Tutoring	Fall 2019	2005	412	4.86	14.07%
Online SI PASS	Fall 2020	9744	1276	7.64	N/A
In-Person SI PASS	Fall 2019	9038	1424	6.35	N/A

Data source: UMBC. (2021). REX Data Warehouse Guided Report: Academic Success Center Tutoring Attended. rex.umbc.edu; UMBC. (2021). REX Data Warehouse Guided Report: SI Grade Report. rex.umbc.edu

In addition, students were more likely to attend online tutoring appointments in fall 2020 than in-person appointments in fall 2019 (see Table 1), even with tutoring appointments maintaining the same length of 50 minutes. There were fewer “no shows” seen across student services, including advising, during COVID-19 than before the pandemic. There could be many factors influencing the lower “no show” rate in fall 2020. First, with all learning occurring online, joining a tutoring session was easy from wherever a student was at the time of their appointment. Even if a student had forgotten about their appointment, the reminders that we sent (one day before and five minutes before a tutoring session) would allow a student to simply click a link and attend their session. Also, in fall 2020, there were fewer drop-in online tutoring services available, and this scarcity may have motivated students to keep their appointments more.

Our campus advising offices also reported fewer “no shows” for online advising appointments in fall 2020, likely due to the convenience of clicking a link versus having to travel to campus or across campus to attend an in-person meeting. There was also less pressure for students to attend an online advising appointment because they could choose to turn their camera off and come straight from other activities to an advising appointment. Our campus found that the ease of online advising encourages many students to attend, especially students who are anxious about the

meetings. The benefits we have seen from online advising during COVID-19 have led our campus advising offices to plan to continue offering online advising appointments in addition to in-person advising appointments, giving students maximum flexibility and choice about how to utilize these services. These findings echo the benefits found at other campuses from online advising during fall 2020 (Venit, 2020).

We have both quantitative and qualitative data showing that our online peer tutoring services have positively impacted student learning and retention. As shown in Table 2, we compare retention rates for first-time admitted students (those who were first admitted to UMBC from directly from high school, including freshmen-seniors at UMBC). For both student admit-types, those who attended content tutoring and SI PASS had higher retention rates than those who did not attend content tutoring or SI PASS. The retention rates for students utilizing content tutoring and SI PASS were higher, no matter the online or in-person format. We saw similar effects on student retention from participating in tutoring and SI PASS when they were completely online in fall 2020 compared to in-person in fall 2019. Overall, most students earned higher grades during fall 2020, perhaps due to changes in course assessment during online learning. But, even considering the increase in cumulative grade point averages overall, first-time and transfer students who attended SI PASS had higher cumulative

grade point averages than students who did not participate in academic support. In addition to the data presented in Table 2, students who attended SI PASS sessions were more likely to pass their classes (9 percentage points lower D/F/W rate) than students who did not attend SI PASS. These results align with previous campus assessments of the positive effects of tutoring and SI PASS participation on student retention and passing courses, even controlling for student academic characteristics and achievement (Carter, 2017; Gregg, 2018). While the increase in retention for students utilizing academic support is promising and is consistent with the literature (Dawson et al., 2014; Reinheimer and McKenzie, 2011; van der Meer et al., 2017), it is also important to note that students who participated in content tutoring are not very different from the average student at UMBC. First-time admitted students attending content tutoring had similar cumulative grade point averages to students who did not attend tutoring. However, transfer students seeking help had lower cumulative grade point averages than those who did not seek academic support. Students who need help in their courses are more likely to make an appointment to meet with a tutor, explaining the slightly lower grade point averages of students attending tutoring. SI PASS is regularly scheduled support for historically difficult courses. It also attracts many students interested in engaging with the course material, not only those who need extra help.

Attended ASC Service/Did not attend ASC Service	Term	First-Time Admitted Students	Cumulative GPA End of Term First-Time Students	1 Semester Retention First-Time Students	Transfer Admitted Students	Cumulative GPA End of Term Transfer Students	1 Semester Retention Transfer Students
Online Content Tutoring	Fall 2020	214	3.25	94.42%	132	3.05	89.23%
No Content Tutoring	Fall 2020	5496	3.27	90.36%	3518	3.12	81.95%
In-Person Content Tutoring	Fall 2019	205	3.17	96.52%	142	2.88	91.85%
No Content Tutoring	Fall 2019	5552	3.17	95.56%	3761	3.04	90.22%
Online SI PASS	Fall 2020	1270	3.46	97.80%	318	3.04	94.03%
No SI PASS	Fall 2020	2888	3.21	95.26%	812	2.88	86.21%
In-Person SI PASS	Fall 2019	1311	3.25	98.09%	327	2.99	93.58%
No SI PASS	Fall 2019	2539	3.04	95.59%	775	2.80	89.16%

Data sources: UMBC. (2021). REX Data Warehouse Guided Report: Academic Success Center Tutoring Attended. rex.umbc.edu/UMBC. (2021). REX Data Warehouse Guided Report: SI Grade Report. rex.umbc.edu/UMBC. (2021). REX Data Warehouse Guided Report: Advising and Registration Status by Plan. rex.umbc.edu/UMBC.

Notes: Students who applied to graduate at the end of the term are not included in the retention rate due to graduation in December. Cumulative GPA reported for students who have a GPA. SI PASS numbers report all students enrolled in SI PASS-supported sections, divided into those who participated in SI PASS for that class and those who did not. These numbers may be duplicative as the same student could be enrolled in multiple courses with SI PASS support available.

We have qualitative evidence of strong engagement among students and tutors from surveys conducted during fall 2020. Contrary to our fear that students might find online tutoring unsatisfactory, students reported similar levels of satisfaction with online tutoring and SI PASS as face-to-face tutoring and SI PASS. In a post-Content Tutoring survey, 90.67% (68/75) of students stated that they felt more confident in their ability to understand the materials after their conversation with the tutor, and 83.78% (62/74) of students gave examples of concepts, strategies, and study habits they learned in tutoring that they used independently later. Similarly, in a post-SI PASS Session Survey, 90.48% (171/189) of students stated participating in SI PASS helped them improve their performance in the course. In an end-of-semester survey, 96.63% (315/326) of students stated they found SI PASS sessions interactive and/or engaging. Students specifically mentioned how useful the interactive and collaborative features used during the online sessions were and liked having the session recordings for review later.

In addition, open-ended comments from our survey of SI PASS Leaders gathering their reflections of the impact of the online study sessions they provided indicate that the online review sessions helped students engage academically and socially:

SI PASS was a very valuable resource this semester as it helped students engage better with course content and

develop not only relationships with other students in the class, but also a reliable resource with leaders. I think this helped students out, especially when struggling in the online setting.

Another SI PASS Leader stated, "Since the semester is online, the opportunity for collaboration among the students are limited. SI PASS was an opportunity for students to come together, collaborate, and tackle chemistry problems in a virtual setting." Other SI PASS Leaders shared that, "For many of the students it was their first semester at UMBC, and they were transitioning to college with very little contact to other students. SI PASS was valuable to facilitate their learning" and that "At the end of the semester, I had students telling me they would not have done as well without attending the sessions."

Tutors and SI PASS Leaders also reaped benefits from their tutoring work online. As mentioned previously, staff strengthened the online synchronous and asynchronous training available for tutors and SI PASS Leaders during the summer. During tutor training, when we asked the tutors about the challenges they faced, the answer that we received most frequently centered around difficulties of offering academic support remotely, including students having trouble with internet connections or with background noise or the platform used for tutoring. Because

students sometimes see tutoring as a panacea for their academic struggles, we took pains to train tutors on the importance of setting clear expectations and achievable goals for each 50-minute session. It takes more time to get concepts across virtually. We also discussed ways for tutors to promote student understanding online since most students kept their cameras off during tutoring and tutors could not rely on cues from students' body language.

While training on the technical solutions for tutoring was paramount, tutors also needed help with how to be intentional with their questioning and active learning techniques, increasing their wait time and keeping the students engaged. The online training format also allowed more tutors to attend training sessions, which helped improve their work as tutors and created important opportunities for community development. The SI PASS Leaders competed in a contest during training for the best mock-session and planning sheets, which they found fun and engaging. We worked with the tutors and SI PASS Leaders to build Discord Channels where they could engage online. We organized game nights, allowing for more social interaction, which became a key benefit to our peer tutors, as they were also students in need of connection with their fellow students. In the end-of-semester survey about their experiences, one SI PASS Leader reflected:

It definitely has been a positive experience to lead in SI PASS!
During the tough times with quarantine, I enjoyed coming

together with other members and have fun mock sessions. It made me destress for a moment. I also enjoyed working with students for physics and helping them solve challenging problems.

Almost all tutors reported that their confidence has grown from tutoring online. In response to an end-of-semester survey of tutors about their experiences tutoring online, 95.83% (46/48) agreed that they feel confident in their ability to motivate students to engage in subject matter/tutoring sessions, 91.67% (44/48) stated that they routinely model study strategies/resources, and 91.67% (44/48) said that they could effectively support students from a variety of backgrounds/learning styles. One tutor shared in a survey response: "I think my tutoring has helped me become a more confident student. It has made me more comfortable collaborating and interacting with other students and has also increased my confidence in my proficiency in the areas I tutor."

Implications for Future Practice

Given the benefits of online tutoring, we will continue to offer a significant proportion of our tutoring and SI PASS sessions remotely even after the pandemic. The growth we have seen in participation in online academic support is promising, especially because students were more likely to attend the sessions regularly online than during face-to-face tutoring. We are pleased to report

that UMBC has provided an Innovation Grant to help us fund additional online and in-person SI PASS sessions and to research the effects on student success from online compared to in-person review sessions, both during remote instruction and after we return to in-person classes.

We plan for socially distanced instruction on campus for fall 2021, which lowers the density allowed in our tutoring spaces. A typical SI PASS exam review session draws over 100 students, which may not be feasible in-person, given new socially distanced campus room capacities. But fall 2020 has shown us that students will take advantage of online support, and so we can continue to offer review sessions remotely without having to find physical spaces. We believe that the growth in student participation in tutoring and SI PASS in fall 2020 was due to the convenience and flexibility that online services provide (See also, Rous, Mozie-Ross, Shin, & Fritz, 2021). In a typical semester, fewer than half of our students live on campus. As a result, many students would appreciate not driving back to campus for an evening tutoring appointment or weekend review session. Further, online academic support platforms allow for easy recording and sharing of tutoring and SI PASS sessions, a useful review tool that students can return to or take advantage of if they cannot attend synchronously.

We believe that the effort we have invested in online training for our tutors and SI PASS Leaders will continue to generate dividends

beyond fall 2021. SI PASS Leaders benefit from the flipped classroom approach to training, allowing them to learn content asynchronously before the synchronous applied learning simulations. Providing training online allows for the same flexibility for our tutors as online tutoring does for our students. An added benefit is that training tutors and SI PASS Leaders within the platforms they would use for tutoring gives them useful insight into the student experience while allowing them to practice with the platforms they will use. Their confidence of knowing what to do when one platform does not work for their students helps tutoring sessions run more smoothly. Additionally, we will continue to use the online tutor and SI PASS Leader communities we have built to allow them to share tips, answer questions, and connect with our staff easily.

Conclusion

Our assessment data from 2020 indicate that students would utilize online tutoring and SI PASS sessions, with similar levels of participation and positive effects on retention and student success as in-person tutoring and SI PASS sessions. The flexibility of being able to access services from anywhere is a key benefit of online student support. We plan to extend our reach by adding online tutoring appointments in the evenings and weekends when our in-person offices are closed. The added flexibility of online SI PASS

sessions will also allow more students to access these academic support services than would be possible on campus, given the requirements of social distancing. While many of our classes will return to in-person instruction this fall, some students will participate in hybrid or online learning, a trend that will only grow over time. We believe that online tutoring and SI PASS will be an integral part of how these students engage academically and socially. By positioning our Academic Success Center services as easy-to-access peer support, we are removing barriers to student success and normalizing help seeking among students. More importantly, we are meeting students where they are—online.

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Book Review: *Supporting Neurodiverse College Student Success: A Guide for Librarians, Student Support Services, and Academic Learning Environments* (E.M. Coghill & J. Coghill, 2021)

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Two seasoned higher education professionals have compiled information and advice intended to help those working in higher education's academic support and learning spaces to better serve neurodiverse students. The editors and contributing authors note that about 1 in 10 college students have a learning disability or learning difference (p. 1). Thus, efforts to increase college enrollment rates, retention, and graduation would benefit if such students were better served by their institutions and not just within the scope of accessibility services units. The editors' stance - in both the way that they approach their work and the assembly of this volume - is that the best way to serve all students—including those who have diagnosed learning disabilities or learning differences (also referred to as neurodivergent) as well as students more generally—is to design programs which address various learning needs by default, with no need for particular trouble to be taken. In

other words, they take a universal design approach (UDL). For those unfamiliar with the concept, one classic example of UDL is cut-outs in curbs along sidewalks. These are necessary for users of wheelchairs and some other types of mobility devices. Still, they also make navigation easier for people pushing strollers, package carriers with carts, and joggers tiring at the end of their run. In many places, we can more or less take the existence of curb cuts for granted, and while they are vital for some, many of us have reason to appreciate them on occasion. Contributors to this volume provide examples and explanations of how we can create curb cuts in the context of academic support.

This UDL approach makes sense for the book's intended audience, which is not those who work in accessibility offices or similar spaces that specifically serve neurodivergent students. Instead, the intended audience is those who work in spaces and units that support the general student population's learning and academic needs, which of course includes neurodivergent students. Contributors describe ways in which programs can design their spaces and services to accommodate the needs of neurodivergent students in such a way that these students might not even have to disclose their particular needs or diagnosis or if they do need to, that the program is well-prepared to meet that need. By doing so, units can best serve the broadest range of students.

Some of the services and contexts discussed, each in a standalone chapter, include: academic mentoring and coaching, academic advising, tutoring, health and wellness, and residence hall services. In addition, each chapter is accompanied by a "Campus Spotlight," which briefly describes a related program at a college or university. The chapters tend to be more general in their description of approaches, while these vignettes offer particular examples. While it seems that each spotlighted program is related to the paired topic, it's not always clear what about the program makes it noteworthy as a good example or promising practice, rather than just *an* example, as the moniker of "Campus Spotlight" implies. However, these spotlight sections effectively draw a picture of the range of possibilities, from programs with multiple staff that operates targeted, year-round programs to small, simple additions to unit offerings.

Many of the modifications suggested for specific contexts would make sense in other situations as well. For example, the authors of a chapter on residence hall programming suggest that dorm meetings might not require that residents participate in person; instead, online chat tools would offer a means for students who have trouble with in-person interactions to offer feedback and participate in their community. One can imagine that online chat tools could be applied in many contexts for similar reasons. With UDL in mind, students

who have to work during a meeting time or have caught a cold might also benefit from alternative means of communication. While adding a chat tool is a relatively simple modification, many of the other enhancements suggested by contributors would require a more substantial redesign of spaces and services — these range from purchasing new furnishings and equipment to bolstering the training of student staff.

While interested professionals are likely to find this volume effective in answering the question, "What might it look like for my office to take a UDL approach to better-serving neurodiverse students?," such readers may find themselves stuck there, as the volume does not address in depth how one would undertake such a project. For example, there is little detail on the content or extent of training appropriate for undergraduate students working as tutors. It is probably not reasonable to expect that amount of detail from an edited volume covering many contexts. Given that many solutions seem to be adaptable in various contexts, it might have been more helpful to the intended audience to address a shorter list of contexts for applications and then provide more detailed information about how to enact such changes. Motivated readers will find lots of ideas here, then, but will need to look elsewhere for the necessary expertise and guidance for effective execution.

Coghill, E. M. H., & Coghill, J. (2021). *Supporting Neurodiverse College Student Success: A Guide for Librarians, Student Support Services, and Academic Learning Environments*. Lanham: Rowman & Littlefield.

Early Intervention for Struggling Online Graduate Students: Persistence Outcomes over Time

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Abstract

This study examined long-term persistence differences between three samples of first-year online graduate students to understand the impact an early intervention had on students who failed the first assignment in their first course. A Fisher's exact test showed no statistically significant difference in the likelihood of remaining enrolled at the institution approximately two years later after the initial intervention point across the three samples, $\chi^2(2) = 1.477$, $p = .48$. The results showed that nearly 50% of students first identified as eligible for the intervention were still active two years later. Therefore, interventions involving academic support may help online graduate students build connections within the university that at-risk students who did not have access to intervention.

Keywords: early intervention, academic coaching, online graduate students, academic support, student retention, persistence

Early Intervention for Struggling Online Graduate Students: Persistence Outcomes Over Time

Online education has become an increasingly attractive option, especially for graduate education, as it allows working adults a more flexible alternative that is not bound by location or time constraints (Mintz, 2019). Online education allows students, including those at traditional brick-and-mortar institutions, to pursue their educational goals from a distance; however, with colleges and universities closing campuses and moving to online learning in the face of COVID-19, larger numbers of students are taking classes online with or without a choice (Smalley, 2020). Although online education does provide a flexible online platform and ease of access, there are stumbling blocks (e.g., preparation, GPA, and online course outcomes) that can hinder a student's ability to complete their degrees online (Wladis et al., 2016). Additionally, the flexibility of online education demands that students be self-directed learners and advocates for themselves to ensure they seek out the resources needed for success (Babcock et al., 2019).

In completely online programs, retention rates, on average, are approximately 10% lower than that of brick-and-mortar programs (Burrus et al., 2019; Rockinson-Szapkiw, 2019). Students who possess greater self-direction and self-motivational skills can still find online education isolating, demanding, and unsettling in

nature without enough support (Burrus et al., 2019; LaPadula, 2003). Moreover, students in completely online courses may have limited access to the array of support services (e.g., learning centers, libraries, advising, transition/bridge programs) offered at their institution compared to students at brick-and-mortar campuses (Roddy et al., 2017). However, online students, including those in graduate programs, desire the same types of support that are offered to students in brick-and-mortar programs (Babcock et al., 2019). Therefore, along with student self-discipline, meaningful feedback, and the quality of faculty and student interactions, institutional support to students has been identified as one of the top factors that has an effect on online student retention (Gayton, 2015). In an effort to raise retention rates, many online programs employ a plethora of support strategies, such as early intervention programs, at-risk notifications, academic coaching, and/or tutoring, to ensure students stay in their courses until completion.

Although student persistence has been broadly examined (Budash & Shaw, 2017; Green, 2015; Lehan et al., 2018), the importance of online graduate persistence requires a worthwhile and focused undertaking. Most persistence research in higher education has focused on students in traditional face-to-face programs (Hachey et al., 2014). However, online graduate programs and students warrant scholarly attention, as they have unique characteristics and needs (Akojie et al., 2019). Somewhat

complicating the research is that a myriad of factors impact online students' decision to persist as well as the difficulty in tracking students once they withdraw (Fetzner, 2013; Layne et al., 2013; Stevenson, 2013; Willging & Johnson, 2009; Zahl, 2015).

Intervention Programs

Intervention programs have been used in higher education the past two decades, starting in community college and undergraduate programs (Gordanier et al., 2018). More recently, intervention efforts have spread to graduate education, including online graduate programs, as one way to support students who are at-risk for stopping out (Muljana & Luo, 2019). Intervention programs often fall into one of two categories—either supplying students with information about their status in a course, which serves as a way to prod students into being more active in their class, or requiring the use of additional academic support services (Gordanier et al., 2018).

At one open-access, graduate-focused online institution, a newly developed early intervention program involved a mix of both approaches. That is, students were (1) notified of their status after the first assignment in the first course and (2) encouraged to utilize academic support services to assist in their success. Given that interventions may be more effective when they are targeted (Harackiewicz & Priniski, 2018), a specific intervention point was determined due to historical evidence that suggested almost 80% of students who failed the first assignment in the first course left the

university by the fourth course (Lehan & Babcock, 2020). As a result of historical evidence and current data, students earning a failing grade on the first assignment of the first course became an indicator to prompt early intervention.

While data from an initial intervention point is helpful in determining if the intervention itself supported students in persisting through that specific course, tracking the same intervention group overtime can help glean a clearer picture of long-term persistence and eventual program completion. Tracking persistence longitudinally with the same sample of students allows for the better ascertainment of the resources utilized during students' tenure in a graduate program as well as determination of whether students completed the program or dropped/stopped out prior to completion. Therefore, the aim of this article is to follow-up on Lehan and Babcock's (2020) recommendation to understand the relationship more fully between participation in an early intervention program and longer-term persistence in online graduate students.

Method

The purpose of this applied research study was to investigate the extent to which online graduate students who participated in an early intervention differed from (1) a matched sample of students in the same course with the same faculty member at the same time and (2) students who were eligible for but declined to participate in the

early intervention. The outcome of interest was persistence approximately two years after the students became eligible for the intervention. A quantitative methodology and causal-comparative design were employed.

Participants

Students who submitted their first assignment in their first course on time and received a failing grade on that first assignment were eligible for participation. The Academic Advising team identified the students who met the criteria for the period from September 1, 2018 through December 31, 2018. Given that the goal was to identify students on the list who would benefit most from the current services offered by the university learning center, students who earned a failing grade because they did not submit the assignment or submitted it late were excluded. This list of students was sent to the learning center's coordinator, who made three attempts to contact each student by phone and email.

Thirty-nine online graduate students received a failing grade on their first assignment in their first course after submitting it on time in a four-month period, making them eligible for the early intervention. Ultimately, 22 (56.4%) of these students expressed interest in additional learning assistance, and the learning center coordinator recommended a tier of service at which they should start based on their unique needs (Tier 1: posted self-directed resources; Tier 2: live chat; and Tier 3: asynchronous or synchronous

one-on-one or group coaching). For additional details regarding these recommendations, see Lehan and Babcock (2020). These 22 students who expressed interest in additional learning assistance made up the Accept sample. The remaining 17 students who decided not to accept learning assistance were included in the Decline sample. Once the recruitment period ended, a request was sent to an external team member who had no knowledge of the study's purpose to create a Matched sample of students in the same course with the same faculty member at the same time as those students in the Accept sample, but these students did not fail their first assignment or visit the learning center. To examine the longer-term differences across the three samples, in September 2020 updated data were requested for all students in the Accept, Decline, and Matched samples.

Results

Table 1 shows the descriptive statistics associated with students in both the Accept and Decline samples who met the eligibility criteria for learning assistance services and includes students in the Matched sample. Compared to the Accept and Decline samples, the Matched sample tended to be more racially diverse and included more women, although these differences were not statistically significant. As reported in Lehan and Babcock (2020), the only significant differences across groups were related to age and time since obtaining the basis-for-admission degree. Specifically,

students in the Accept sample were significantly older than those in the Matched sample. In addition, the number of months since degree attainment was significantly lower for those in the Matched sample than those in the Accept and Decline samples. Table 2 shows the enrollment status of the three groups two years after the initial intervention.

Table 1
Descriptive Statistics for the Three Groups of Students

Sample	Age	Race	Gender
Accept Sample	$\bar{x} = 52.1$ (SD = 11.7)	8 – Black/African American	11 – Female
		6 – White	6 – Male
		6 – Not Reported	5 – Not Reported
		2 – 2 or more races	
Decline Sample	$\bar{x} = 48.0$ (SD = 12.4)	10 – Black/African American	6 – Female
		4 – White	9 – Male
		2 – Not Reported	2 – Not Reported
		1 – Hispanic/Latino	
Matched Sample	$\bar{x} = 41.4$ (SD = 10.0)	6 – Black/African American	17 – Female
		9 – White	4 – Male
		2 – Hispanic/Latino	1 – Not Reported
		2 – Not Reported	
		1 – American Indian/Alaska Native	
		1 – Asian	
		1 – 2 or more races	

Table 2
Enrollment Status Two Years Later for the Three Groups of Students

	Active	Inactive
Accept Sample	10 (45.5%)	12 (54.5%)
Decline Sample	8 (47.1%)	9 (52.9%)
Matched Sample	11 (50%)	11 (50%)

In terms of changes in enrollment status from the short-term investigation in June 2019 to the longer-term investigation in September 2020, two students in the Decline sample changed from Active to Inactive. In the Accept sample, one student's status changed from Active to Inactive, whereas another student's status changed from Inactive to Active. In the Matched sample, one student's status changed from Active to Inactive, and three students' status changed from Inactive to Active.

Approximately two years after they completed their first assignment in their first course, it was found that three students in the Decline sample and three students in the Matched sample had participated in academic coaching outside of the early intervention. In the Decline sample, all three students participated in one coaching session each. Two of those three students were still actively enrolled at the institution at the two-year follow-up. In the Matched sample, the three students participated in one, five, and seven coaching sessions. The students who had five and seven coaching sessions were both still actively enrolled at the institution at follow-up, whereas the one student with one session was not. There was a notable trend that the students who sought academic support (from all three samples) on multiple occasions were still enrolled at the institution. Twenty-two students in the Accept sample agreed to participation in academic support. In the Accept

sample, the average number of sessions among the students who participated in academic coaching (Tier 3, $n=10$) was 4.71 ($SD=4.19$). Results of a Fisher's exact test showed that there was no statistically significant difference in the likelihood of being active approximately two years later across the three samples, $\chi^2(2) = 1.477$, $p = .48$.

Discussion

In the preliminary scan of the data, several trends were noted among the students who participated and declined participation in the early intervention. Consistent with the findings of Dauer and Absher (2015), students who accepted academic support tended to be older with more time in between earning a degree. In addition, more women accepted support, whereas more men declined it. This trend is consistent with the findings of previous research that men might be less likely to seek academic support than women (e.g., Brown et al., 2020; Huerta et al., 2017; Lin, 2016). Furthermore, although the matched sample of students was more racially diverse, slightly more Black/African American students declined academic support than accepted it. This trend is consistent with the previous finding that university students of color tend not to seek academic support, as doing so could be discrediting (Ciscell et al., 2016).

The primary purpose of this applied research study was to examine the extent to which online graduate students who participated in an early intervention differed in their persistence from (1) a matched sample of students in the same course with the

same faculty member at the same time and (2) students who were eligible for but declined to participate in the early intervention. Prior to the initiation of this study, it was found that 80% of students who failed their first assignment in their first course after submitting it on time were no longer active at the university 20 weeks later. Findings of a short-term investigation (Lehan & Babcock, 2020) showed that the attrition rate of the students who accepted the early intervention (48.7%) was significantly lower than the known institutional rate of 80%. In this longer-term investigation, findings showed that, two years later, the attrition rate of the students selected for the early intervention (46.2%) remained relatively unchanged. This finding might highlight the importance of early intervention in becoming a consistent support for students to persist at the university.

Additionally, as was reported in the previous short-term investigation (Lehan & Babcock, 2020), students who accepted academic support did not differ significantly from either students in the matched sample or students who declined support in terms of persistence. On the one hand, the finding that students who participated in the early intervention had a similar persistence rate to the general student population, even though the former failed their first assignment in their first course, is promising. At the same time, the finding that students who accepted and declined support had similar persistence rates calls into question the effectiveness of

the full early intervention, as the latter did not participate in academic coaching when it was offered. However, it is possible that the initial identification and outreach efforts had a positive effect on these students' persistence.

Overall, research investigating the relationship between academic coaching and program completion is varied in its results. However, research focused on students' understanding of academic support has shown that students value accessible and engaging information (Slater & Davies, 2020) to help to show them the value of academic support (Babcock et al., 2019). In this study, all 39 students who failed their first assignment in their first course after submitting it on time were supplied with information about academic support as part of the early intervention (Gordanier et al., 2018). Even though some students declined support at the time they became eligible for the intervention, they had knowledge of the academic support systems in place at the institution to assist them should they decide they needed assistance. Three of these students ultimately did utilize academic coaching services. These findings are consistent with those of Babcock et al. (2019) who found that students who understand academic support services may be more likely to use them when needed.

Researchers have found that increased usage of academic support services might not improve performance (Damgaard & Nielsen, 2018; Pugatch & Wilson, 2018; Gordanier et al., 2018) or

lead to higher program completion (Lehan et al., 2020). Nonetheless, institutional reports reflect that the proportion of students who stopped out or dropped out at 20 weeks later was 80%, which stemmed from students failing the first assignment in the first course. Therefore, the findings of this study show hopeful results, as almost half of the eligible students who took part in the intervention still remained two years later. These persistence rates were similar to those reported 20 weeks after the students were identified for the early intervention (Lehan & Babcock, 2020), with a notable exception. Specifically, the persistence rate of students who declined academic support decreased from 58.8% at 20 weeks to 47.1% two years later. It is possible that the persistence rate of this group of students will continue to decline over time, revealing significant differences between students who accept and those who decline academic support. Overall, the persistence of students in the acceptance for early intervention group over time was better than the persistence group who declined early intervention.

Implications for Practice and Research

The findings of this research have several internal and external implications, some of which this institution has begun to implement. The students who participated in the early intervention were indistinguishable from the matched sample of students in the same course with the same faculty member at the same time, despite their having failed their first assignment in their first course

after submitting it on time. Therefore, it seems that the intervention should be continued at the institution. Additionally, professionals at other institutions can follow a similar process to support students. That is, they can select an indicator of risk for drop out or use the same one employed in this study. Then, they can identify students with that indicator and engage in targeted outreach to encourage them to utilize academic support services at the institution. Importantly, they can track outcomes for these students and compare those who accepted and declined support as well as those who were eligible for the intervention and the general student population to promote continuous improvement. Both Yang et al. (2017) and Rockinson-Szapkiw et al. (2016) spoke to the importance of tracking online graduate persistence to identify specific institutional and integrative factors that may negatively impact online graduate student persistence. It is important to continue to investigate how student persistence and graduate retention rates could improve with academic support (Colver & Fry, 2016).

Overall, informing students who are at risk for drop out about the types of academic support available may create greater awareness of institutional resources as well as academic information that can be utilized when needed (Sneyers & De Witte, 2018). Whereas many of the students did not accept academic support the first time it was offered, letting students know about the resources available early in their program could be a first step in reducing the

stigma around support services being remedial and providing more inclusive academic support services (Babcock et al., 2019). Helping students to understand the support structures at the beginning of the program and having the personalized support of in-person outreach may help students to build a connection to the institution and/or support service personnel early in their program. Interventions that involve academic support may help students to build connections within the university that at-risk students who did not have access to an intervention lack.

The findings of this study also have implications for future research. The possibility that students who seek academic support early in their program may persist at a greater rate than those who do not seek assistance was one of the catalysts for this early intervention (Lehan & Babcock, 2020). The specific cohorts of students examined in this study can be tracked through program completion to assess if there are differences among the three groups in terms of completion rate as well as time to completion. Tracking students to program completion may provide more insight into whether or not these students will continue to use academic support services or if those who did not utilize services as often (or at all) will begin to use academic support. Furthermore, program completion data can be analyzed to determine if students who engaged in more academic coaching than their peers completed at a

higher and/or faster rate than those who did not engage in academic coaching or those who only completed one session.

Whereas this study tracked students who were eligible for an early intervention, it is still unclear what specific factors influenced them to accept or decline academic support. Moreover, it is not clear why some students utilized academic support numerous times and others attended only one session and did not return. Qualitative research with students who have attended multiple coaching sessions and those who have only attended coaching once might be warranted. Understanding these factors and the conditions under which academic support impacts persistence is paramount to improving services and targeting outreach efforts towards those students who are less likely to seek academic support themselves.

When looking at the early intervention point, it is important to evaluate whether the selected indicator of risk for drop out is still appropriate for identifying students who would benefit most from the intervention (Harackiewicz & Priniski, 2018). When the intervention point was initially selected in 2018, only 20% of students who failed the first assignment in the first course persisted beyond 20 weeks. A recommendation for research is to revisit institutional data to determine whether this percentage has stayed static or changed to understand if the first assignment is still a relevant intervention point for students at this institution. Attrition points at an institution can be fluid and change over time; therefore,

reviewing the data to see if the initial pain point still exists or has shifted is important when understanding persistence and institutional trends over time. If a new attrition point is discovered through analysis of institutional data, then replicating this study with the same three group types and a different intervention point is recommended.

Additional research surrounding academic coaching as a whole is needed to learn more about this type of academic support, as it is relatively new compared to the more established supports of tutoring and supplemental instruction (Osborne et al., 2019; Robinson, 2015). Understanding how academic coaching can influence program completion rates is crucial in advocating for the value of academic support, not just to students early in their program, but to all students (Lehan et al., 2020). It is important to continually assess different intervention points and different groups (e.g., students in the first course, students in the dissertation phase), utilizing academic coaching to ascertain if the intervention increases persistence for that specific group. Replicating this research at other institutions, both online and brick and mortar, with different intervention points would help add to the body of literature on academic coaching as an intervention for at-risk students.

Limitations

This study was not without limitations. First, the sample was relatively small. Second, this study was conducted at a single

institution; therefore, the results might not be generalizable to other learning centers. Nevertheless, they may provide guidance, information, or reference for other researchers seeking to initiate tracking early intervention opportunities among online graduate students. Third, all levels of academic coaching services within the learning center were not tracked. Although level 1 usage is not tracked, a future look at tracking the components of level 2 coaching chat services may provide additional insightful findings. Fourth, although a matched sample was included in the analyses, student pairs sometimes differed in demographic characteristics (e.g., sex/gender, race/ethnicity) when an exact match was not available. These and other factors might partially explain these findings.

Conclusion

Targeting students who are at higher risk for attrition, as this early intervention program did, offering an intervention, and then tracking students longitudinally can help to ascertain the longer-term effects of the intervention on persistence. Having a clearer picture of how academic support, specifically coaching, can promote student persistence may aid in resource allocation and continuous improvement efforts. Building upon the study by Lehan and Babcock (2020), this study represents a next step towards better understanding how academic coaching can support at-risk students and whether academic coaching can improve persistence rates over time. As was the case at 20 weeks after eligibility for the early

intervention was determined, students who accepted academic support were indistinguishable from those in a matched sample and those who declined support in terms of their persistence approximately two years later. Nevertheless, compared to the institutional benchmark indicating that 80% of students who earned a failing grade on their first assignment in their first course were no longer active 20 weeks later, the findings of this study are promising, as nearly 50% of students who were eligible for the intervention were still active two years later.

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The Impact of Developmental Course Enrollment on Self, Identity, and College Success

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Abstract

A typical pattern occurs in community colleges where students must enroll in developmental coursework before beginning college-level classes. As a result, these students often struggle and face a lack of academic success. To better understand the experience of first-year college students enrolled in developmental courses at community colleges, this discussion examines the impact of enrollment in developmental courses and the long-term effect this enrollment has on the student's perception of self and their persistence and college success. Practical implications and recommendations for future research are also included.

Keywords: developmental course enrollment, community colleges, persistence, college completion, first-year students, perception of self, labeling theory

The Impact of Developmental Course Enrollment on Self, Identity, and College Success of First-Generation College Students

Enrolling in developmental coursework is a reality for many first-generation students entering college. Understanding the impact of this enrollment and the label of "developmental" being placed onto students is critical to addressing these students' success rates. This article describes the existing literature on developmental education in the United States and related factors contributing to first-generation college students' journey while enrolled in developmental courses. A literature review reveals how these students navigated the college setting, perceived their sense of self and identity, and worked towards completing a degree or credential. As noted in the literature, a typical pattern in community colleges is first-generation college students often enrolled in developmental coursework before starting their college-level classes (Martin et al., 2017). Overall, the effect of labeling college students' developmental was missing in the research. In addition, the evaluation of first-generation college students and the effect of being labeled developmental was also ignored. Knowledge around the effect of labeling developmental college students' developmental is critical since so many developmental college students do not finish their degree and struggle to get a job (Attewell et al., 2006; CCRC, 2019).

Community Colleges and the Birth of Developmental Education

The establishment of Juliet Junior College in 1901 represents the beginning of community colleges in the United States. Smith Morest (2013) described the origins of community colleges and their role in providing high school students the chance for a degree, especially those who did not wish to pursue a baccalaureate education. Community colleges were and still are an inexpensive alternative to a four-year education and offer a unique role in the United States, attracting students from diverse backgrounds with the intent of learning (Smith Morest, 2013). According to Smith Morest (2013), the community college mission set the stage for students to earn degrees and or certificates in career and technical programs or complete a transfer degree. However, researchers argued that with the open-access policy present within so many community colleges, students arrived at college underprepared, and the need for remedial level programming was born (Dell-Amen & Rosenbaun, 2002; Koch et al., 2012; Lundberg et al., 2018; Moss et al., 2014; Moss & Yeaton, 2013; Smith Morest, 2013).

The need for developmental courses has increased dramatically over the last few decades, especially in community colleges (Levin & Calcagno, 2008). Community colleges have exhausted significant resources on remediation in the hopes of addressing the deficiencies many students entering community colleges bring (Levin & Calcagno, 2008). Utilizing a review of several remedial approaches

showing success in reducing dropout and failure rates, Levin and Calcagno (2008) described the complex challenge community colleges face in meeting these students' needs. Levin and Calcagno (2008) argued that community colleges could no longer rely on the typical approach of teaching preparatory standalone developmental courses before students move into their college-level classes and must evaluate new remedial strategies and take chances on their implementation. Dell-Amen and Rosenbaun (2002) described a unique approach to remediation that avoided stigma for developmental college students where students were not labeled. Unknowingly, Dell-Amen and Rosenbaun (2002) found the stigma-free approach had the unintended result of moving students into an invisible status at the college without their awareness.

The literature examining community colleges and developmental education included a multi-faceted look at community colleges' role in college students' remediation. The impact of the label "developmental" for college students was absent from the discussion and its effect on students' academic success and community colleges' overall success. Understanding the impact of labeling college students' developmental is needed so that community colleges can redirect their focus and better support developmental students' journey.

The Modern American Developmental Education System

For decades, colleges have instituted academic support to assist students with a documented lack of college coursework readiness (Bettinger et al., 2013; Daiek & Dixon, 2012; Lundberg et al., 2018; Moss & Yeaton, 2013; Rutschow & Sneider, 2019). This process, described as remediation by Lundberg et al. (2018), plays an essential role in higher education institutions across the nation and provides access to a college degree for many (Bettinger et al., 2013; Moss & Yeaton, 2013; Rutschow & Sneider, 2019). Remediation is a common approach at community colleges used to academically and socially prepare students during their early stages of college, yet every higher education sector has students that start college underprepared (Levin & Calcagno, 2008; Lundberg et al., 2018; Moss & Yeaton, 2013; Rutschow & Sneider, 2019).

For traditionally disadvantaged students—including students of color, low-income students, and students whose parents are recent immigrants to the United States—researchers indicated that remediation requires colleges and universities to dedicate considerable resources to provide developmental education for underprepared students entering college (Lundberg et al. 2018; Moss & Yeaton, 2013; Uretsky et al., 2021). As a result of the academic challenges these students face on top of their backgrounds, providing academic support in relation to their academic experiences is needed.

Completing the developmental sequence is a challenge for many students (Attewell et al., 2006; Bailey et al., 2010). Using the Achieving the Dream database of over 200,000 students, Bailey et al. (2010) examined enrollment and completion rates for thousands of developmental community college students who progressed through the developmental sequence. They found many students did not complete their developmental sequence and stopped attending college altogether. However, Bailey et al. (2010) noted just passing one or two developmental courses prepared students with essential skills for future education and life. Attewell et al. (2006) found a strikingly different picture around enrollment in developmental courses and college success. Attewell et al. (2006) found that academic struggle did not persist through the student's educational journey. The academic gap seen with college students enrolled in developmental coursework was more likely due to pre-existing academic weaknesses present before students entered college.

Current research focuses on poor preparation and pre-existing academic weaknesses for students rather than the label of being developmental. As students continue to test into developmental courses, a complete understanding of their struggle with success and the effect labeling has must be understood.

First-Generation College Students' Journey and Developmental Coursework

First-generation college students, or those students whose parents graduated high school but did not attend college, represent a substantial population and are considered high risk for persistence and retention when arriving in college (Alessandria & Nelson, 2005; Hand & Miller Payne, 2008; Martin, 2015). McFadden (2016) found first-generation community college students faced several barriers to academic success and were at the greatest risk of dropping out. Several researchers indicated first-generation students often did not understand what to expect with college, experienced less family support, came from poorer households, and experienced poor academic preparation while in high school (Kilgo et al., 2018; McFadden, 2016; Pascarella et al., 2003; Terenzini et al., 1996). When considering the race and ethnicity of first-generation students, Martin (2015) found low-income White first-generation college students were more likely to attend college part-time, work while attending college, commute to school, and not be involved in co-curricular activities or with other students. Alessandria and Nelson (2005) examined the self-esteem of minority racial and ethnic first-generation college students. They found the first-generation status of minority and ethnic students impacted these students' self-esteem, with self-esteem scores being higher for these

first-generation students versus non-first-generation American students.

The literature on first-generation students consistently identified concern for these students' preparation for college and overall academic success. Again, a continued absence of discussion in the literature was still present when considering labeling college students' developmental and the impact on first-generation students' academic success.

College Preparedness and College Readiness

College preparedness and college readiness are essential skills that lead to college student's academic success, especially those enrolled in developmental classes. Reid and Moore (2008) examined first-generation college students' perceptions and attitudes and found that almost half of the students in their study felt unprepared for college. Additionally, Reid and Moore (2008) found that first-generation students and their families needed ongoing support and information about the college experience and that first-generation college students benefited from additional support and guidance from college staff and personnel. According to Byrd and MacDonald (2005), experiences students gained from work, and the support and motivation they received from family, played a valuable role in developing key skills students needed to succeed in college (i.e., time management, goal focus, and self-advocacy skills). Byrd and MacDonald (2005) found that younger first-generation

college students were at greater risk of being underprepared than older first-generation students due to having fewer life experiences that prepared them for college. This finding was critical for students whose parents never attended college since these students were likely to see themselves as inadequately prepared for college from the start (Byrd & MacDonald, 2005).

Understanding the effect of college students labeled as developmental needs to be examined so educators can develop programming for them that ensures they are better prepared and ready for college.

College Persistence and College Completion

College persistence and college completion for developmental college students is a topic of concern for community colleges (Crisp & Delgado, 2014; Fong et al., 2018; Grimes, 1997; Hanover Research, 2014; Ishitani, 2015; Ishitani & Reid, 2015; Napoli & Wortman, 1996). Hanover Research (2014) indicated that community colleges must consider the possible benefit of mandatory developmental programs and optional developmental programs to improve persistence and retention for developmental students. Crisp and Delgado (2014) found that college students enrolled in developmental courses had a slightly higher likelihood to persist than college-ready students who intended to transfer and earn a degree at a four-year college. As a result, college-ready students dropped out at community colleges (Crisp & Delgado, 2014).

Ultimately, Crisp and Delgado (2014) argued that educators should examine factors such as motivation to understand community college persistence. Fong et al. (2018) identified unique motivational profiles based upon students' personal beliefs and goals towards learning and discussed how these beliefs could positively or negatively affect their achievement and persistence. Grimes (1997) similarly examined the person and considered factors such as self-esteem, study strategies, and student's locus of control. Grimes (1997) indicated that underprepared students demonstrated less persistence in their coursework than students who arrived in college skill-ready and presented a stronger internal locus of control, perhaps resulting in an overall higher course success and completion rate.

Psychosocial factors such as motivation and a student's perception of self were strong indicators for achievement and persistence outcomes in college (Grimes, 1997). This finding reflected other community college research on motivation and its relationship to persistence. Two essential studies that considered persistence for first-generation university students came from Ishitani (2015) and Ishitani and Reid (2015). Both found persistence for first-generation students to be problematic, and Ishitani and Reid (2015) indicated first-generation students in their second semester were at the highest risk of leaving college. After their second year, students' likelihood of dropping out diminished

(Ishitani & Reid, 2015). Napoli and Wortman (1996) indicated that psychosocial factors like motivation and self-regulation were positively correlated to success for community college students. That overall identifying positive aspects that can support student retention is essential. Napoli and Wortman's (1996) study revealed gaps in community college persistence literature, primarily motivational predictors.

College students enrolled in developmental courses find college completion a daunting task (Bailey et al., 2010; Ishitani, 2015). Ishitani (2015) argued first-generation college students were more likely to leave college than their peers with college-educated parents; students whose parents did not have a college degree had an 8.5 times higher likelihood of not finishing college and were likely to leave during their second year of school. Confirming being a first-generation college student negatively impacted college persistence and completion, Ishitani (2015) later added that students' high school experiences influenced and shaped the likelihood of graduating from college. Ishitani (2015) illustrated the necessity of examining first-generation student attrition during the second year of college and the effective timing of interventions for moving students towards college completion.

Smith Jaggars et al. (2015) investigated three developmental programs. They found developmental students on accelerated pathways or pathways which allow students to complete

remediation and enroll in college-level math and English within a shorter time frame had greater success than students not on an accelerated approach. Students on an accelerated pathway completed their college credit courses within three years. To maintain strong student performance and completion in college-level coursework, Smith Jaggars et al. (2015) argued robust content, well-trained faculty, and wrap-around student support services must be in place for students connected to the accelerated pathways models. Bailey et al. (2010) argued the need to build several developmental instruction levels into one longer, more intensive, fast-paced course. According to Bailey et al. (2010), the goal is to reduce the confusion around the developmental sequence and shorten the time before a student starts college courses. When students begin their college credit coursework as soon as they start college, students are more likely to have academic success, attain a degree, and complete college (Bailey et al., 2010).

The literature examining developmental college students' persistence indicated psychosocial factors such as motivation are essential to persistence for developmental college students. In contrast, completion strategies around the second year of college and accelerated developmental models showed promise. However, until the full impact of labeling students' developmental is understood, college persistence and completion rates for developmental students will continue to lag.

Success and Challenges of America's Developmental Education System

Today, a top priority for community colleges is to improve their students' academic success (D'Antonio, 2020; Daugherty, 2018; Fong et al., 2017; Goldrick-Rab, 2010; Lundberg et al., 2018; Moss, 2013; Ngo, 2019; Woods, 2017). Goldrick-Rab (2010) reviewed qualitative and quantitative studies using a meta-analysis approach and examined the factors leading to understanding community college successes and challenges. Goldrick-Rab (2010) and Moss et al. (2014) identified a need to go beyond a discussion around the completion rates and weaknesses of community college students. They recommended that colleges move to a discussion around strategies shaping community colleges' ability to serve students.

Developmental English Strategies for Academic Success

Community college developmental writing courses are critical to developmental students' academic success since these courses provide students with the fundamental writing skills needed in their other college classes (D'Antonio, 2020; Daugherty et al., 2018; Moss et al., 2014; Woods et al., 2017). D'Antonio (2020) examined a developmental writing course that included an identity-oriented approach to better understand students' experiences in community college developmental writing courses. D'Antonio (2020) found that adding strategies within the developmental writing curriculum that

encouraged students to explore their identity could enhance students' academic writing.

Daugherty et al. (2018) examined 36 community colleges in Texas and the corequisite design or the pairing of a college-level English course and the developmental English course utilized at colleges for developmental writing and college English. Daugherty et al. (2018) noted that emerging data around English corequisites was positive, showing that students enrolled in the co-requisites courses had greater success than students not enrolled in the courses; however, additional research on corequisite models and the students who experience the greatest benefit from the approach was still needed.

Using a quantitative approach to examine the state of Florida's 2014 cohort of incoming college students, Woods et al. (2017) found college students who chose to enroll in developmental courses were more successful overall in these courses. Many developmental students enrolled in a gateway English course over a developmental course when given a choice (Woods et al., 2017). Future research exploring the success of underprepared developmental English students is crucial to the decisions made around the ongoing redesign of developmental education in higher education.

Moss et al. (2014) considered the classroom composition of students' first credit course in English and the impact on developmental students' performance. They found participation in English developmental programs was higher when full-time faculty

taught the classes and when the classrooms contained more developmental students versus non-developmental students (Moss et al., 2014). The literature on developmental writing courses emphasized their success is key to students' academic success. Given the critical nature of developmental writing courses, the research gap around labeling students' developmental needs to be investigated to improve these students' academic success

Developmental Math and the Long Journey to College Completion

In community colleges across the nation, mathematics is the most common remedial subject for incoming underprepared college students and poses the most significant academic challenge (Fong et al., 2015; Kwon & Ngo, 2015; Lundberg et al., 2018). Lundberg et al. (2018) utilized a case study approach to better understand remedial math students at Chief Dull Knife College in Lake Deer, Montana. They completed their developmental coursework and successfully continued to credit courses. In their study, Lundberg et al. (2018) found developmental math students who adopted ways to think, believe, and value their identity as developmental math students had greater success in their developmental coursework and avoided the stigma of being a developmental student. Fong et al. (2015) examined over 800 community college developmental math students' beliefs about their learning strategies. They found developmental math students had difficulty evaluating their learning strategies, which decreased their ability to succeed in their

math courses (Fong et al., 2015). Black developmental math students had the lowest accuracy in estimating their learning strategies.

In contrast, Hispanic developmental math students indicated a higher use of motivational and cognitive learning strategies for learning (Fong et al., 2015). With developmental math success, Fong et al. (2015) asserted it was necessary to understand that students from different racial and cultural backgrounds responded differently to beliefs about their learning strategies which must be considered when considering course design. Kwon and Ngo (2015) examined over 12,000 first semester community college students and the role of multiple measures such as transcript outcome data (GPA and prior math courses) and placement test scores for students and overall success in college. Using transcript data and placement test scores for developmental students' initial placement, Kwon and Ngo (2015) asserted that community colleges could place students at the appropriate course level more effectively.

The literature examining developmental math indicated many successes for developmental math students, including college students who completed remedial education and successfully continued their education. Nevertheless, many developmental math students stalled and failed or even dropped out (Fong et al., 2015). Understanding the role labeling plays with developmental math students is imperative and must be considered in creating and designing developmental programming and curriculum. Many

students are at-risk in developmental college math programs nationwide, and the lack of success is seen.

Developmental Reading Strategies as an Answer to America's Growing Literacy Problem

Reading deficiencies are present for many students entering college, impacting college retention and completion rates for these students (Caverly et al., 2004; Flink, 2018; Snyder, 2002). Flink (2018) argued the benefit of Sustained Silent Reading (SSR) for teaching readers coming to college in need of reading remediation. Although Flink (2018) did not see a change in reading beliefs for students after participating in the SSR reading course, observation of a positive attitude towards reading was present, which increased students' comfort level with reading. Pacello (2014) described the importance of developmental reading, writing students' experiences, perceptions, and ability to take knowledge from the courses and apply it to different learning contexts. Caverly et al. (2004) examined developmental reading through the lens of a standalone course providing instruction on strategic reading. They found students retained the skills learned from the strategic reading instruction and outperformed the control group on a standardized test and average grade for a reading-intensive history course. Snyder (2002) identified a positive relationship between course-based reading strategy training and increased reading comprehension skills for first-year students.

The literature on developmental reading highlighted examples of success for college students enrolled in developmental reading courses and those who went on to succeed at the college course level (Flink, 2018). However, college students continue to arrive at college underprepared as readers and struggle to complete their developmental courses and stay enrolled.

First-Generation College Students, Developmental Coursework, and Perceptions of Self

A key element to understanding community college students as a whole is understanding the multiple roles students play in their lives beyond students. Kim et al. (2010) argued student perceptions of self and their age were useful in examining community college students. Students' self-perceptions of the primary roles in their lives (i.e., student, worker, parent) were critical to understanding how roles emerged for students and the coping mechanisms they developed to deal with their many obligations (Kim et al., 2010). To explore student differences within community college populations and understand the social-psychological outcomes and the many roles demands students experience, Kim et al. (2010) utilized role theory. Kim et al. (2010) emphasized that student self-perceptions framed the way students walked into the college environment and their hopes and dreams about their education.

The label of developmental college student adds another layer of identity that educators must understand when considering college

students today. This awareness can inform the redesign of a developmental curriculum that works for students and supports their academic success.

The Impact of Labeling before College

Before college, labeling begins early in a student's academic journey and can have a negative effect on their educational outcome and academic success (Levin et al., 1982; Maas, 2000; Shifrer, 2013; Van Houette, 2013). Levin et al. (1982) examined high school teachers' evaluation of ninth-grade students using a school psychologist report provided to teachers for review. Teachers' expectations were less favorable and negatively and significantly influenced when the reports described students as emotionally disturbed. Continuing to examine the negative effect of labels placed onto students, Maas (2000) examined fourth-grade students from 200 schools in the Netherlands and investigated the interaction process between teachers and students and how teachers came to label a student as a problem student. Teachers considered two factors in the labeling of problem students (Maas, 2000). The first factor was a student who fell below the minimum level of achievement for their class, while the second factor considered a student with behavior problems (Maas, 2000). In this study, Maas (2000) determined the students' social class background, gender, and ethnicity were the most important characteristics considered by teachers when considering whether students met the factors that

determined the problem student label. Ultimately, Maas (2000) found that students' social class background had the most significant negative effect in labeling students as problem students.

Shifrer (2013) explored how stigma influenced teachers' and parents' educational expectations for students labeled with learning disabilities while in high school. The study's findings indicated that teachers and parents were more likely to hold lower academic expectations for their children labeled with a learning disability. The children were likely to have expectations like their teachers and parents (Shifrer, 2013). Continuing to examine label placement, Van Houette (2013) used a multi-level analysis of data of 6,545 students in 46 Flemish secondary schools. This study's findings indicated that those students' teachers identified as less able and less interested in school were negatively labeled (Van Houette, 2013). Teacher expectations for these students were low, and teachers spent less time supporting these students in the classroom (Van Houette, 2013).

Labels placed onto students prior to college can have a devastating and long-term effect on the students' academic journey. Some students, when entering college, have the uphill battle of fighting labels previously placed before entering a college classroom.

Theories of Identity and Self

The awareness of self and identity is critical to understanding developmental college students and their construction of self. In everyday life, people think of new ways of acting, which frees them to determine their destiny (Miller, 1973). This process can be applied to developmental college students and how they perceive themselves as learners. Howard (2000) emphasized the social bases of identity, especially race, ethnicity, sexuality, class, and age. He concluded that identity is defined in a layered and fluid manner in today's world, and the many layers must be understood to appreciate one's sense of self. Approaching identity and self through the various meanings people attach to themselves and others and the values people hold, Hitlin (2003) argued the critical nature of understanding self and identity and asserted that people's self-conceptions consist of more than the various roles and values groups they are connected to. Self is defined through role expectations and reference groups and prioritized values within these groups (Hitlin, 2003). Still focused on the importance of roles in people's lives, Marcussen (2006) argued that the self is composed of various identities from how they represent themselves in a particular role. The relationship between students' many roles, self-esteem, and psychological distress, specifically depression and anxiety, is essential to understanding college students. Marcussen (2006) analyzed the direct effects of aspiration and obligation

discrepancy and found high levels of correlation between how students deal with depression and anxiety and their resulting level of obligation and aspiration. The literature on identity and self revolves around social psychological explanations of self and identity that view self as a social, emotional byproduct. The literature must include research and study around the emergence of self and labeling college students' development since this labeling is influential in how the student defines themselves.

Race, Ethnicity, Gender, and Self

Educators must understand the impact of race, ethnicity, and gender to alter the trajectory of how developmental college students succeed in the classroom (Acevedo-Gil et al. 2015; Barbatis, 2010; Brickman et al., 2013; Green & McClenney, 2008; Huerta et al., 2018; Marsh & Noguera, 2017; Martin 2015). The research of Huerta et al. (2018) examined the complicated process of academic identity formation for ethnically diverse male high school students who aspired to attend college. The significance of the Huerta et al. (2018) study was the researchers challenged the existing literature and prominent storyline that young men of color do not invest in higher education. Huerta et al. (2018) found that young men of color who planned and attained goals for college, received support and encouragement from peers and family, and attended schools that supported their success formed a college identity that permitted the young men to see themselves moving through several statuses,

including college enrollment, the military, and/or career and vocational training.

Marsh and Noguera (2017) explored Black male students labeled at-risk academically and their perceptions about their academic journey and teachers' perceptions of these students. Marsh and Noguera (2017) highlighted concerns about the impact of labels placed in school and contended the impact teachers' perceptions had on these students and their academic experiences were critical. Green and McClenney (2008) examined minority status, student engagement, and educational outcomes in community colleges. They sought to determine whether students from certain racial and ethnic groups differed in the effort they devoted to their education and the extent to which this effort impacted the students' outcome in college. Black students were found to be more engaged in school but less successful academically when compared to their White peers, and Hispanic students earned considerably lower grades than their White peers (Green & McClenney, 2008).

Brickman et al. (2013) found Hispanic students in developmental classes had greater academic success and higher degree completion when compared to their peers not enrolled in developmental courses. Brickman et al. (2013) argued the necessity to understand factors such as interest, instrumentality, and self-regulation for Hispanic students and why some students were more motivated than others in their academic persistence and college success.

Similarly, Acevedo-Gil et al. (2015) examined Latinas/os community college students enrolled in developmental education courses and found when developmental college students received academic approval that emphasized high expectations, positive social identities, and improving academic skills, these students performed at a higher level. College personnel and peers' validation and approval were critical to Latinas/os success in developmental education courses (Acevedo-Gil et al., 2015).

Barbatis (2010) examined the perceptions of underprepared, ethnically diverse community college students who participated in a first-year learning community and found parents and extended family were instrumental to these students. Faculty and college leadership, Barbatis (2010) asserted, would do best to develop new academic programming based on student experiences that supported college success and persistence to graduation. To that end, Barbatis (2010) suggested developmental education would benefit from research that reflected the developmental college student's voice and focused on access and preparation topics.

Martin (2015) examined low-income, first-generation, White students and investigated their social class impact while in college. Martin (2015) described the students as being overextended while working in college, with one student comparing their academic experience to a rubber band wound too tightly and likely to break.

The literature on race, ethnicity, and gender presented various factors that shaped the academic journey and experience for diverse, developmental college students. For the most part, a continued absence of discussion around the labeling of students' developmental and the label's impact was noted once again in the literature; however, Marsh and Noguera's (2017) study, which explored the labeling of Black male students academically high risk, stands alone as a remarkable project on the effect of labeling Black students. Research like Marsh and Noguera's (2017) exemplified the need to examine labeling's impact, especially when considering the already impactful perceptions held toward race, ethnicity, and gender for students.

Self-Concept and Self-Efficacy

Self-concept and self-efficacy are essential attributes to understanding developmental students' persistence in college and their academic success. Bandura (1982) asserted self-efficacy influences how the individual acts, thinks, and their emotional state. Bong and Clark (1999) argued that self-concept and self-efficacy shared similarities, such as perceived competence in how the two concepts are defined. Self-efficacy referred to a person's conviction to achieve a particular result, whereas self-concept embraced self-related ideas and feelings, with competence as a critical ingredient (Bong & Clark, 1999). Bandura (1982) identified that the higher the level of self-efficacy, the higher the individual's accomplishments.

Fong and Krause (2014) examined underprepared college students who enrolled in a developmental learning frameworks course and their self-reported beliefs around self-efficacy. By providing students' feedback on their course progress, Fong and Krause (2014) argued students had increased mastery levels that led to the reversal of a history of underachievement and failure, supporting Bandura's assertion about self-efficacy and accomplishments. Martin et al. (2017) argued that when college students enrolled in two or more developmental courses, academic self-concept decreased for those students due to their sense of success being diminished when taking an increased number of developmental classes. Colleges seeing academic success for developmental students, Martin et al. (2017) suggested, should not adjust course content and delivery or how students are placed due to the impression that enrollment in two or more developmental courses could have a negative psychological impact, especially on self-concept and self-efficacy.

The literature examining self-concept and self-efficacy effectively describes internal constructs for the developmental college students; however, research on the labeling of college students' developmental is still ignored. A discussion was emerging around developmental students' self-concept; nonetheless, a direct examination of the developmental label is needed to effectively

understand the shaping force on students' college success or lack of success.

Motivation

Understanding the attribute of motivation is key to improving the persistence and success rates of developmental college students. Ley and Young (1998) compared the motivation levels of developmental college students to regular admission college students. They found that providing additional support to developmental learners was crucial to developmental students' success despite their similar motivation levels to college-ready students. By including motivation in the design of instructional strategies, Ley and Young (1998) argued instructors could encourage self-regulated learning for college students enrolled in developmental classes. Fong et al. (2018) examined college students' goals and motivation and achievement, and persistence. They asserted that understanding characteristics that put students at risk and buffered against academic difficulty was critical to understanding community college student success.

In the review of the literature, a pattern was present where researchers examined college success and persistence through a lens of race and ethnicity to determine success for community college students. To best understand college student success and persistence, Fong et al. (2018) found that educators could understand community college students' persistence levels more

completely by evaluating malleable attributes like motivation and academic performance. Examining motivation and self-empowerment, Martin et al. (2014) found that predictors like college persistence, cultural capital, and being academically underprepared could be overcome by community college students who were motivated about their learning. Martin et al. (2014) asserted motivation was a shaping factor that influenced students' drive to succeed and have academic success. Martin et al. (2014) argued the necessity to offset students who lacked cultural capital or academic preparedness with motivation for their learning.

The literature on motivation highlighted the importance of this attribute when considering community college students. With increased motivation, students can overcome being underprepared in the classroom and focus on their learning. By investigating the effect of labeling on developmental students and utilizing the knowledge gained around motivation, educators can help students use motivation to move beyond their label and strive towards academic success. This knowledge will also play an essential role in the understanding associated with shame and the success of developmental students.

Shame

Shame is a critical emotion to understanding the success of developmental students. Ways that students can experience shame are in the form of failure related to academic goals and not

achieving them (Turner & Husman, 2008). Steps students used in the learning environment to sustain, improve, or minimize their academic motivation after experiencing shame were identified by Turner and Husman (2008). In their study, Turner and Husman (2008) found that when students have a collection of study strategies to turn to after a shame-producing learning event, they successfully managed their emotions and perceptions of failure. Colleges, Turner and Husman (2008) asserted, should introduce multiple learning and study strategies early in a student's academic journey to improve their ability to be successful in shame-producing scenarios.

As research on shame has evolved, so has the development of instruments to measure it. Reinhard et al. (2010) utilized the Achievement Emotions Questionnaire (AEQ) to examine emotions college students experienced while studying and taking tests, including shame. Reinhard et al. (2010) found negative emotions like shame were likely detrimental to students' engagement and learning and must be understood to support student's academic success efforts. Johnson (2012) examined shame in the education environment using the Social Environment Survey and found that faculty need to understand and consider academic failure and personal inadequacy when developing course objectives and assessments utilized to evaluate students. Johnson (2012) asserted that when faculty understand how shame is associated with

academic failure and use that understanding to create alignment between course objectives and course assessments, students have a greater sense of control and motivation in their classes and reduced the level of shame students experience in their classes.

The literature on shame and learning and creating college success was limited but is influential to the understanding of college students labeled developmental who regularly deal with shame's adverse effects. Offering strategies to assist developmental students when confronting shame is critical to students' persistence and college success.

Grit

For developmental students, grit is a critical element in understanding how underprepared students can persist in college and experience academic success. Duckworth et al. (2007) defined grit as "perseverance and passion for long-term goals" (p. 1087). Hochanadel and Finamore (2015) examined learning and growth mindset and explored how educators can nurture grit and foster an attitude oriented towards growth. Hochanadel and Finamore (2015) argued that when educators create a learning environment that teaches growth and encourages a growth mindset, students persist and experience academic success. Sriram et al. (2018) examined several environmental factors (i.e., focusing on others, socializing with others, investing time in academic activities, success-oriented purpose, and valuing religion) associated with self-control and the

emergence of grit. The findings of the Sriram et al. (2018) study supported a growing body of literature where purpose, spirituality, and religion play an important role in students developing high levels of grit and can be effectively applied to developmental students.

Light and Nencka (2019) examined the relationship between intellectual ability, grit, and academic outcomes. The study's findings indicated low-ability students, like developmental college students, succeeded in reaching academic targets by compensating for educational shortcomings using grit (Light & Nencka, 2019). Light and Nencka (2019) indicated their findings do not suggest grit is as significant as ability. Still, for low-ability college students who were successful, grit played an essential role in their success (Light & Nencka, 2019).

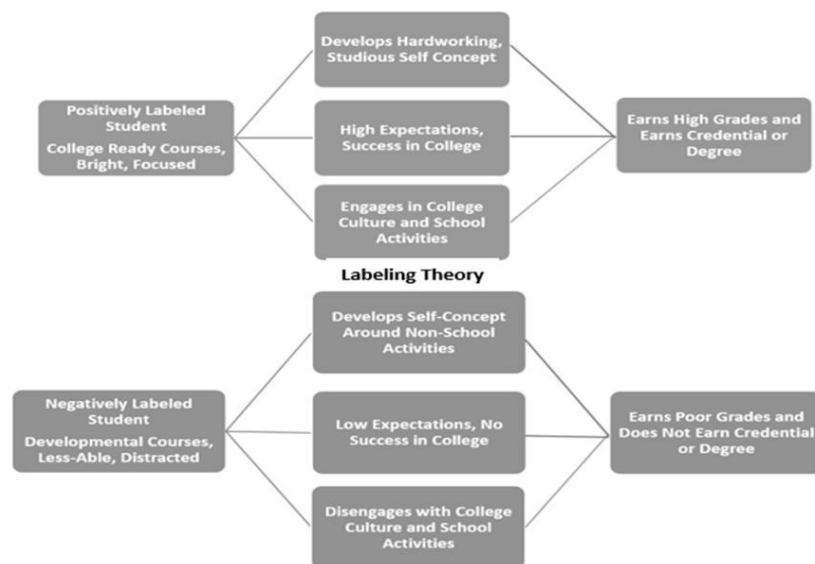
Grit has been associated with college students persisting and having a greater sense of purpose and ability. Unfortunately, the grit literature did not examine persistence in reaching long-term goals for college students labeled developmental. This literature gap is vital to recognize since grit may be instrumental in academic programming where developmental college students can thrive and experience success although lower in academic ability.

Labeling Theory

Labeling Theory utilizes an evaluative process where one receives the placement of categorical terms such as good, bad, fast,

slow, well-behaved, or disruptive (Becker, 1963). This theory has been adopted in education to look at how teachers assign labels to students related to their ability, potential, or behavior and how students live to those labels (Marsh & Noguera, 2018). Several researchers indicate that labeling can negatively affect a student's educational outcome and academic success (Levin et al., 1982; Maas, 2000; Shifrer, 2013; Van Houette, 2013). Figure 1 describes the placement of a positive or negative label onto a student and the attributes that emerge.

Figure 1
Labeling Theory and Developmental College Students



With a positive label, students develop a hardworking self-concept with high expectations and a propensity to engage in college resulting in college degrees. With a negative label, students develop a self-concept rooted outside of college with low

expectations of school success and a tendency to disengage from the school environment and no college degree. When considering college students enrolled in developmental classes, placement of a negative label will likely result in students developing a self-concept based outside of college with low expectations of success and a likelihood of disengaging from school and leaving college without a credential or degree.

March and Noguera (2018) asserted labeling, despite its harmful effects on the individual's self-image and self-concept, continues to be used in schools throughout the nation and results in students being placed in negative categories, stigmatized, and denied membership in the broader academic community. Although research has shown that labeling has a negative effect on self-concept, which leads to academic failure, it is still used because of convenience (March & Noguera, 2018).

Synthesis of Selected Literature

The selected literature examined community colleges and the emergence of developmental education, the modern developmental education system, first-generation college students and developmental coursework, the successes and challenges of developmental education, and first-generation developmental students and their perception of self and identity. Researchers examining community colleges and the emerging developmental education system provided a multi-faceted look at the role

community colleges played in college students' remediation and the need for community colleges to redirect their focus and better support developmental students' journey (Dell-Amen & Rosenbaun, 2002; Koch et al., 2012; Lundberg et al., 2018; Moss et al., 2014; Moss & Yeaton, 2013; Smith Morest, 2013).

When examining the modern developmental education system, many researchers asserted colleges need to continue to provide academic support to assist students who have a documented lack of college coursework readiness and that community colleges play an essential role in this process (Bettinger et al., 2013; Daiek & Dixon, 2012; Lundberg et al., 2018; Moss & Yeaton, 2013; Rutschow & Sneider, 2019).

Researchers exploring first-generation college students and developmental education highlighted that a substantial population of students in colleges today are first-generation students, and they are considered high risk for persistence and retention when arriving in college (Alessandria & Nelson, 2005; Hand & Miller Payne, 2008; Martin, 2015). Researchers emphasized that first-generation students are consistently underprepared for college, and their overall academic success continues to be in jeopardy (Byrd & MacDonald, 2005; Crisp & Delgado, 2014; Fong et al., 2018; Grimes, 1997; Hanover Research, 2014; Ishitani, 2015; Ishitani & Reid, 2015; Napoli & Wortman, 1996; Reid & Moore, 2006).

When considering the research examining successes and challenges of developmental education, researchers emphasized the need to go beyond the relationship between the structure of opportunity at community colleges, the institutional practices, and the traits and characteristics of students and to focus on a discussion around the policies shaping community colleges' ability to serve students (Goldrick-Rab, 2010; Moss et al. 2014). An extensive examination considering research on English, math, and reading developmental course strategies illustrated the need for colleges to investigate a variety of developmental course designs to meet the needs of the students (Caverly et al., 2004; D'Antonio, 2020; Daugherty et al., 2018; Flink, 2018; Fong et al., 2015; Kwon & Ngo, 2015; Lundberg et al., 2018; Moss et al., 2014; Snyder, 2002; Woods et al., 2017).

Implications and Future Research

Researchers exploring first-generation students, developmental education, and these students' perceptions of self emphasized the need to understand the many roles developmental students play, their experiences before college, and the intersection of race, ethnicity, gender and its effect on the students' sense of self to effectively design a developmental curriculum that meets the needs of these students (Acevedo-Gil et al. 2015; Barbatis, 2010; Brickman et al., 2013; Green & McClenney, 2008; Hitlin, 2003; Howard, 2000; Huerta et al., 2018; Kim et al., 2010; Marsh & Noguera, 2017; Martin

2015; Marcussen, 2006). Still, other researchers asserted to best understand developmental students and their sense of self, an examination of self-concept and self-efficacy, as well as motivation, shame, and grit, was needed (Bandura, 1982; Bong & Clark, 1999; Fong et al., 2018; Fong & Krause, 2014; Hochanadel & Finamore, 2015; Light & Nencka, 2019; Martin et al., 2019; Johnson, 2012; Ley & Young, 1998; Reinhard et al., 2008; Sriram, 2018; Turner & Husman, 2008).

A significant body of literature was available to evaluate the critical topics of this study and highlighted the seriousness of the problem at hand for first-generation students enrolled in developmental courses and the effect on students' perception of self and college success; however, a consistent gap in the literature was found when looking at the impact of labeling first-generation college students developmental and understanding these students' journey to academic success. This literature review successfully underscored the need for additional research and study to look at college students and the effect of labeling college students' developmental. Educators and college leaders must understand this effect to move underprepared college students toward academic success and preserve students' sense of identity and self in the process.

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Recipe for Success: Teaching Students Metacognitive and Self-Regulatory Learning Strategies

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Abstract

The decision to explicitly teach students learning strategies and skills and how to think reflectively about their learning process is framed theoretically by the literature on self-regulation, metacognition, and social-cognitive theory. Interventions for self-regulation and metacognitive strategies can optimize the student learning process and teaching metacognitive strategies in higher education is known to improve subject matter comprehension and course performance. This article offers a theoretical framework for explicitly teaching study strategies and skills, reviews literature on the efficacy of implementing study strategy and skills interventions,

and then provides a detailed example for teaching a self-regulatory time-management strategy with embedded metacognition.

Keywords: learning strategies, metacognition, time management, self-regulation, study skills

Recipe for Success: Teaching Students Metacognitive and Self-Regulatory Learning Strategies

Many college students struggle with studying effectively (Geller et al., 2018; Hartwig & Dunlosky, 2012; Morehead et al., 2015), yet this is not a new phenomenon. Courses offering instruction to enhance college students' study behaviors have been documented for more than 125 years, with such courses proliferating in the 1920s and beyond (McKeachie, 1988). Student success-type courses, as they have come to be known, continue to be offered in various forms (e.g., study skills, first-year seminars, learning-to-learn, learning frameworks) to facilitate students' autonomy in college, strengthen their strategic learning processes, and increase their grades, retention, and graduation rates (Hodges et al., 2019; Tuckman & Kennedy, 2018; Weinstein & Acee, 2018). Additionally, many educators are now helping students strengthen their study skills by embedding learning strategy instruction within discipline-specific courses to promote students' autonomy and success.

Sellers et al. (2015) described autonomous learners as “independently competent in a wide variety of academic tasks, able to actively achieve goals based on values, and skilled in self-reflection” (p. 23). These students are “aware of their learning strengths and weaknesses” (p. 23) and “use effective learning strategies and adopt those strategies to new situations” (p. 24). Similarly, Weinstein and Acee (2018) defined strategic learners as goal-directed and autonomous, “who have the skill, will, and self-regulation needed to survive and thrive in different postsecondary educational contexts” (p. 230). Weinstein and Acee see these components as malleable intraindividual factors under a learner's direct control and amenable to change through educational intervention.

The purpose of this article is to promote teaching students how to think reflectively about their learning process using metacognitive and self-regulatory strategies. After reviewing the theoretical underpinning and relevant literature, we offer by example a strategy to help students hone their overall study, metacognitive, and time management strategies and skills.

Learning Strategies and Study Skills

The terms *learning strategies* (also called *study strategies*) and *study skills* are often conflated, but it is important to clarify the language as they are not the same. A learning strategy can be understood as a deliberate, goal-directed plan for accomplishing a learning task, and

we posit that it involves metacognitive awareness. Supporting the implementation of a learning strategy are learners' study skills—the “methods and techniques that aid effective learning” (Oxford English and Spanish Dictionary, n.d.-a). Drawing from the field of literacy, Afflerbach et al. (2008) posited that

Reading strategies are deliberate, goal-directed attempts to control and modify the reader's efforts to decode text, understand words, and construct meanings of text. Reading skills are automatic actions that result in decoding and comprehension with speed, efficiency, and fluency and usually occur without awareness of the components or control involved. The reader's deliberate control, goal-directedness, and awareness define a strategic action.

Control and working toward a goal characterize the strategic reader who selects a particular path to a reading goal (i.e., a specific means to a desired end). (p. 368)

Given this conceptualization, a student's combined use of study skills contributes to implementing an overall strategy. For example, a student may combine previewing a textbook chapter's bold print headings (skill), paraphrasing in the text margin (skill), and using the end-of-chapter questions to self-quiz (skill) as an overall strategy for comprehending the chapter content. In the absence of a holistic strategy, skills can be used in isolation, but teaching

students both strategies and skills is vital so that both might be more effective in achieving the students' goals.

Theoretical Framework

The decision to explicitly teach students how to think about their learning process reflectively is framed theoretically by the literature on self-regulation, metacognition, and social-cognitive theory. Additionally, three types of knowledge (Schraw et al., 1994) form the conceptual glue for this theoretical framework. Broadly, declarative knowledge (skill) is the “what,” procedural knowledge (skill) is the “how,” and conditional knowledge (strategy) is the “when and why.” For example, knowing the basic parts of a bicycle is declarative knowledge; knowing how to ride a bicycle is procedural knowledge; knowing when and why to switch gears while riding a bicycle is conditional knowledge. In the context of this article, these forms of knowledge respectively translate as a student's ability to describe a study skill (declarative), use the study skill (procedural), and determine the skill's usefulness in a particular situation (conditional). The understanding and application of learning strategies and skills are influenced by the dynamic interaction among personal, behavioral, and environmental factors of human development described in social cognitive theory (Bandura, 1991). Bandura contended that human behaviors, such as behaviors associated with learning, are motivated and controlled by self-influences. These influences

include self-monitoring the causes and effects of one's behavior, judging one's behavior regarding personal expectations and environmental situations, and evaluating affective self-reaction (Bandura, 1991; Zimmerman, 1994, 2000). Zimmerman (1995) added that learning socially requires both metacognition as well as regulative agency with social sources such as instructors and peers. More so, the *self-regulatory* aspect of learning contributes to learner self-reliance as a learner developmentally matures.

Academic self-regulation is the self-monitoring of thoughts, feelings, and actions related to learning success (Schunk, 1994; Zimmerman, 1989) occurring on both a global and real-time level (Weinstein et al., 2011). More specifically, global self-regulation involves selecting learning approaches, managing time (over weeks, months, and years), selecting help-seeking approaches, and managing motivation for learning. Real-time self-regulation involves managing high anxiety, utilizing metacognition, evaluating the efficacy of learning strategies, managing time (over the course of a task, hours, or days), focusing attention, and sustaining concentration. Self-regulation also includes a self-efficacy mechanism (Bandura, 1991) that plays a central role in the exercise of personal agency. A learner's sense of self-efficacy has a substantial impact on thought, affect, motivation, and action, empowering students to set and attain personal learning goals (Schunk, 1990). In other words, when a learner has high self-

efficacy—the belief in their ability to succeed in achieving an outcome or reaching a goal (Bandura, 1997)—they reflect confidence in the ability to self-regulate motivations and behaviors in the learning environment. As Zimmerman's (1995) work suggested, academic self-regulation functions with the aid of metacognition.

Metacognition (Flavell, 1976, 1979) is often defined as “thinking about our thinking.” This reflective act refers to the cognitive processes that internally monitor, plan, assess, and judge one's performance and understanding (Brown, 1987; Flavell, 1979). Metacognition is a critical mechanism for guiding cognitive development (e.g., Piaget, 1976) as individuals develop conscious awareness and the capability to communicate their reasoning (Fox & Riconscente, 2008). Continuing with the bicycle example, metacognition extends beyond knowing the parts of a bicycle, how to ride it, and when and why to switch gears. Metacognitively, a rider may think to herself, “I've been focusing my thinking on when and why to switch gears, but instead, I should probably think more about mastering rider safety practices first.” In this example of metacognitive monitoring, the rider is evaluating and re-prioritizing pieces of knowledge. In education, metacognition—the self-regulation of cognition—increases learners' ability to be responsible for their own learning as they make informed cognitive choices about what to learn and how to learn it.

Self-Regulation and Metacognition Interventions

Interventions for self-regulation and metacognitive strategies can optimize the student learning process (Halpern, 1998; Schraw et al., 1994). The time management aspect of self-regulation intervention generally occurs in three forms. First, intervention can directly address specific student behaviors after a time-management problem is identified. For example, Ozer et al. (2013) found that a series of five 90-minute structured sessions regarding patterns of procrastination, irrational thoughts, and productive thinking decreased participants' academic procrastination scores on a pre- and post-test measure. Second, intervention can directly address general or specific student behaviors before a time-management issue is noted. Scent and Boes (2014) reported that a group intervention program focusing on principles of acceptance and commitment resulted in gains in psychological flexibility. Most group setting intervention programs or courses have notable limitations, though. The time and cost required to organize and implement these programs may be impractical in budget-slim institutions and unappealing to students already committed to other coursework. Third, intervention can indirectly address student behaviors through the course and task design and delivery. For example, Perrin et al. (2011) found that students studied more consistently throughout the week when access to online study material was contingent upon completing the previous study

module. Students in the non-contingent access-group habitually crammed their studying into the time just before a for-credit weekly quiz. Students in the intervention group had improved quiz scores compared to pre-test scores. In this type of intervention, the instructor makes proactive decisions that indirectly nudge students to manage time without their active awareness.

Teaching metacognitive strategies in higher education is known to improve subject matter comprehension and course performance. Amzil (2014) implemented a five-session explicit-instruction intervention with college students that focused on metacognitive processes for reading by combining reflective dialogue, modeling, and group practice. On a posttest, the experimental group outperformed the control group in both reading comprehension and metacognitive awareness. Maftoon and Alamdari (2020) employed a 10-week set of metacognitive strategy lessons with undergraduate students learning English as a foreign language (EFL) that focused on planning, monitoring, and evaluating. Participants showed a significant difference in posttest listening comprehension improvement compared to the EFL students who did not participate in the intervention lessons. The benefits of teaching metacognitive strategies also apply across disciplines. For example, a case study of metacognitive strategy instruction in an undergraduate chemistry course revealed increases in student academic confidence, self-concept, and academic enjoyment in both chemistry and math

(Zhao et al., 2014). Additionally, survey findings from a Cook et al. (2013) study revealed that first-year science major students changed their academic behavior as a result of attending a 50-minute lecture on metacognitive learning strategies. Students who know about strategies for learning are more likely to use them when faced with a variety of learning tasks (Pintrich, 2002).

Self-regulation, including metacognition, is not an all-or-nothing occurrence but refers to the degree that students are motivationally, metacognitively, and behaviorally active in their learning (Zimmerman, 1986) as evidenced by choice and control (Zimmerman, 1994). However, students cannot self-regulate unless they have options available for their learning, and they must self-manage critical dimensions of that learning (Zimmerman, 1994). The use of self-regulative strategies implies that students can attain a host of learning tools based on forms of knowledge and selected strategies that are best suited for their learning task. By doing this, students can control factors that influence their learning and focus on mastering the learning task.

The unfortunate reality is that many students lack sufficient variety of research-based learning and study strategies and skills, in part because explicit instruction of such strategies and skills is not given time and attention in the classroom. Although students may acquire self-regulatory and metacognitive knowledge and skills through experience and age, Pintrich (2002) noted that both explicit

and implicit instruction are still critical because too many students do not exhibit these skills in college.

The lack of knowledge about metacognitive learning strategies is particularly evident in students from minoritized groups, lower income households, or under-resourced schools. These students are less likely to have been explicitly taught research-based learning strategies than their peers from higher resourced schools and are less likely to have had the opportunity to take challenging courses that require metacognitive skill use. McGuire (2021) referred to closing the gap between awareness and use of metacognition between students from different backgrounds as reaching metacognitive equity. When this gap is closed, underprepared students will be equipped to perform as well as students from backgrounds where this information is more likely to have been acquired through experience or by interacting with mentors who pass on these skills to their mentees. Haak et al. (2011) demonstrated that providing students with highly structured introductory biology course emphasizing practice, reflection, and frequent assessment of knowledge improved the performance of all students but had a disproportionate benefit for disadvantaged students. Given the benefits of self-regulation and metacognition intervention with potential to increase student achievement across disciplines, the remainder of this article offers an example of

teaching a self-regulatory time-management strategy infused with metacognition and supported by a set of transferable study skills.

The Recipe Approach

Recipes require particular ingredients combined in particular ways to produce a particular dish. However, recipes can be personalized and still create the same dish. The intent of a personalized study recipe is to direct students to (a) consider their own general awareness of their thinking and learning, (b) think about what they already know and do not know about the material to be learned, (c) select appropriate learning strategies to implement during learning, (d) plan, organize, and self-regulate their learning process, and (e) self-assess their understanding of the material once they have engaged in learning the material. This article's recipe was adapted from one used by coauthor Rosianna Gray, a biology professor, titled "Grandma's Recipe for Accountable Learning and Time Management" (Gray, 2020), which is an endearing nostalgic label used to provide a sense of comfort for students. However, the title and recipe can be easily adapted and used for a general student success course, or as it was conceived, as a learning strategy recipe embedded within a discipline-specific course. Additionally, this strategy may be useful for instructors to introduce to students during individual meetings or for learning support educators to integrate into academic support programs such as tutoring, Supplemental Instruction, and academic coaching. Teaching

students about metacognitive and self-regulatory strategies should come early in the semester, certainly within the first few class meetings or support sessions, followed up by periodic review of the strategies to encourage students' use.

General Considerations for Instructors

Within the first week, instructors should provide instruction on metacognition and self-regulation, including definitions and examples. McGuire (2015) offered a flexible and comprehensive framework for delivering such instruction. For classes with traditional-aged students, instructors might also emphasize the gap between academic demands on high school students and those on college students and have students reflect on their own experience with learning academic content. Doing so with open-ended questions is a powerful strategy that can help students understand their level of commitment to their personal learning goals and provide them with the insight of using metacognition to increase their learning. The instructor should also emphasize the learner's role in honing their learning skills by introducing immediate-use strategies such as using a weekly planner/semester planner (calendar) or creating a comprehensive notebook organizational system and then model the skills needed to implement the strategy effectively. Students who do not enact self-regulation and metacognitive strategies may experience disappointment after receiving their first exam score, leading to considerations of

dropping the course, changing their majors, or even leaving school (Cook & McGuire, 2017). The class meeting following the first exam is a strategic opportunity for the instructor to review self-regulation and metacognition and for students to reconsider the benefits.

Instructors could also consider administering a learning strategies assessment (during class or as an out-of-class assignment) such as the *Learning and Study Strategies Inventory (LASSI)* (Weinstein et al., 2016) or the *Motivated Strategies for Learning Questionnaire (MSLQ)* (Printrich & de Groot, 1990) to provide students with awareness about their current use of learning and study strategies and skills. Many of these types of assessments can provide both students and instructors with diagnostic measures to help identify areas in which students can benefit most from educational interventions, and many can be used as a pre/post achievement measure.

Student Time Management Recipe for Exam Preparation

As with any recipe, there are ingredients and procedures. For this example, the ingredients include the course syllabus, the course calendar (which may already be included in the syllabus), course textbooks and/or assigned readings, a blank calendar template (paper), and a digital calendar (such as Google or Outlook).

The Recipe

The recipe steps for exam preparation are (a) count the number of available study days, (b) identify the chapters, sections, or pages

covered on the exam, (c) rank the chapters (or sections) by difficulty, (d) assign chapters or sections to each day, and (e) list specific study strategies and skills for each day. Each of the steps listed is a skill supporting the overall strategy of time-management that accomplishes the goal of test preparation. A quick look at the five steps reveals that time-management, metacognition, and self-regulation are all rolled into one recipe.

Count the Number of Available Study Days. This means that students are to read the course syllabus and the course calendar to identify the dates of all exams (and/or any other tasks/projects which require reading). In Gray's experience, many students report that they do not look at their course syllabus or calendar until something goes wrong. Therefore, she suggests that instructors consider investing several minutes of class time teaching students about the differences between a course syllabus and calendar and how to read them because knowing these differences build agency for students who feel underprepared or overwhelmed. Checking the calendar is a self-regulatory step because students are initiating the process of looking ahead and increasing their awareness of due dates. In this example, on the first day of class (August 23), a student uses the course calendar to identify September 24 as the first exam date. Figure 1 is a visual representation for determining the number of reading/study days until the identified exam.

Figure 1

Determining the Total Number of Days Available for Reading and Study August 23 – September 24

S	M	T	W	Th	F	S
	Aug 23	24	25	26	27	28
	First class	Day 1	Day 2	Day 3	Day 4	Day 5
29	30	31	Sept 1	2	3	4
Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12
5	6	7	8	9	10	11
Day 13	Day 14	Day 15	Day 16	Day 17	Day 18	Day 19
12	13	14	15	16	17	18
Day 20	Day 21	Day 22	Day 23	Day 24	Day 25	Day 26
19	20	21	22	23	24	25
Day 27	Day 28	Day 29	mental rest	mental rest	Exam date	

When determining the total number of available days, Gray prefers for students to exclude the two days before the exam for the sake of mental rest and cognitive integration. That said, the premise of *spaced practice* (e.g., Kang, 2016) is the process of spreading out the practice of material over time which enhances memory, problem-solving, and transfer of learning to new contexts. The literature on spaced practice as an information retrieval strategy does not indicate a single, specific lag time between practice and test because it is context- and content-dependent. Further, spaced practice is a review strategy for reviewing previous content, but Gray's approach is generally used for all new material. This means that the duration of mental rest before an exam is not an exact number. Students' experience may lead to former habits of cramming as much studying as possible into the few hours and

days before an exam regardless of the exam performance outcome. The instructor should acknowledge this temptation and then encourage students to trust the process and remind students to practice good self-care habits such as getting enough sleep, eating well, engaging in physical activity, and connecting with loved ones.

Identify All Readings Covered on the Exam. Students must be sure they know which chapters or sections from the textbook will be tested, including any readings supplemental to the textbook. Students may choose to highlight the information on the syllabus or calendar or perhaps write the information on sticky notes or on a white board. In this example, the student notes from their course syllabus that content in textbook chapters 2 through 7 will be included on the first exam.

Rank the Chapters (or Sections) by Difficulty. This step engages students' metacognitive thinking by ranking the chapters or sections of course material according to perceived difficulty, consequently impacting the time required for completing the reading. In Gray's experience, it is by far the most intimidating and complex for students because they are unsure how to estimate the difficulty of material they have not yet learned. Students' backgrounds and academic skill sets are unique. Students must ask themselves questions about their current abilities and study methods and then answer honestly. Figure 2 offers examples of

questions useful as a think-aloud strategy that instructors can model for students regarding metacognitive processes.

Figure 2
Sample Think-aloud Prompts for Modeling Metacognitive Thinking

Self-Thought Question	Self-Thought Response
How long does it usually take me to read material and understand it?	I know it takes me longer to read history than science, but then again, I like science more than I like history, and I'm really good at science.
When I read, should I make flashcards, write in the margins of my textbook, make a concept map, create an outline of notes (etc.)?	Well, for my history class, it's better when I make an outline like a timeline and make a list of important names, but in science, it's better when I highlight in my book, try to draw my own pictures, and then make a concept map.
Have I seen this material before, or is it completely new to me?	I guess I need to check the table of contents and also skim the headings in the chapter. Oh, and I can look for words in bold or italics, and I can look at charts and figures. Maybe I should skim the chapter summary, too, to see if the material seems familiar. I think I'll also do a short self-check...I'll time myself reading and "taking notes" for 15 minutes and see how much material I get through. That can also help me decide how "hard" the reading is."

Developing a strategy for tackling a large project involving unfamiliar and challenging content is one of the biggest challenges any learner faces. Employing systematic processes such as this can provide a useful structure for creating a plan. Comprehensive

models of learning and especially reading comprehension employ multidimensional approaches, including recognizing sociocultural and disciplinary influences. That is, when students read, they not only must become aware of the social and cultural practices of each context within the discipline they are studying but also draw knowledge about the meaning of the text (activating schema) from their own prior knowledge and cultural upbringing, using their unique set of skills, understandings, and prior experiences (Holschuh, 2019). Sociocultural factors and experiences will play a role in students' metacognitive processes. Figure 3 shows how the student in this example might visualize the ranked reading material.

Figure 3
Example of Visualizing Ranked Readings with Metacognitive Notes

Chapter	Thoughts	Difficulty
Chapter 2 – General Chem	I was pretty good at measuring and cooking at home, but I don't know if that will help me with formulas and equations	2
Chapter 3 – Water Chem	I know a lot about beach salty water and drinking water, but this might be different.	4
Chapter 4 – Carbon Chem	I've heard of carbon before, that's it.	3
Chapter 5 – Macromolecules	Is this even a real word?	1 – HARDEST
Chapter 6 – Cell Structure and Function	SHOULD be the easiest, we did this in middle school <u>and</u> high school.	6 – EASIEST
Chapter 7 - Membranes	I remember something about this with cells, so it shouldn't be too bad, but the chapter is really long.	5

Note. These notes may be handwritten on paper or typed into a document.

Assign Chapters or Sections to Each Day. After ranking the sections of material according to difficulty, students decide how much reading and studying to do on each day accounting for difficulty. In this example, a basic division of 29 days across six chapters might result in allotting approximately 5 days per chapter, in the order they will be taught in class. However, students must consider allocating fewer than 5 days for chapters or sections they ranked as easier and more than 5 days for those they ranked as more difficult. The distinction between allotting and allocating is important because allocation includes purpose and intention beyond a basic division of time (Oxford English and Spanish Dictionary, n.d.-b). Given this distinction, allocation utilizes the metacognitive work done in the text difficulty ranking. It is also important to remind students to consider other demands on their time and energy: other course work; family, social, and job commitments; personal interest activities such as student organizations and hobbies; and personal health activities including exercise and sleep.

Completing this step reminds students that their time and energy are finite. Self-prioritizing time and energy helps develop students' metacognitive skills, will, and self-regulation (Weinstein et al., 2011). At times, the instructor may feel more like a coach offering encouragement than a content expert teaching about

macromolecules, but student struggle accompanied by instructor support will foster and reinforce learner self-reliance.

Ongoing Adjustment of Study-Day Allocation. When students begin to engage with course material, they often find that they must revise their initial estimates for the number of study days devoted to each chapter. Making ongoing adjustments to time allocation teaches students about the messy process of real-life time management. Although often used in an economic context, Gray uses the phrase “the sliding scale” to describe the ongoing adjustment of time allocation in which each chapter ultimately ends up receiving as many study days as its difficulty demands. Further, having students reflect on how they decided when and how to adjust the time develops students' metacognitive processes.

List Specific Study Strategies and Skills for Each Day. Gray requires students to use a blank calendar page or pages on which to handwrite specific study strategies and skills for each day such as active reading, concept mapping, flashcard making, etc., along with an estimated length of time. Writing by hand can result in deeper learning than typing (e.g., Mueller & Oppenheimer, 2014; Smoker et al., 2009), partly because notetaking by hand is generative and is immune to the pressing of a “dictation” key on an electronic device such as a laptop computer. Specific strategies or skills may also include utilizing digital resources such as the textbook publisher's online materials or webpages maintained by Supplemental

Instruction (SI) leaders. Consequently, this step in the recipe may take the most time and care because it requires students to evaluate their study options and make strategic selections that will be the most effective and efficient. Figure 4 shows three sample levels of detail from one calendar week: inadequate, acceptable, and optimal.

The optimal entry includes the subtopics the student will

Figure 4

Examples of Inadequate, Adequate, and Optimal Detail for a Calendar Entry

Inadequate detail						
SUN	MON	TUE	WED	THU	FRI	SAT
Ch. 2	Ch. 2	Ch. 2	Ch. 2	Ch. 2	Ch. 3	Ch. 3

Adequate detail						
SUN	MON	TUE	WED	THU	FRI	SAT
elements & compounds, sub-atomic particle	isotopes, avg atomic mass	P table, electron diagrams	all types of bonds	chemical rxns	Ch. 2 review	polar bonds, prop. of H ₂ O
flashcard	teaching	video	video	Make study guide	self-quiz	Flash-cards
30 min	30 min	45 min	45 min	45 min	45 min	30 min

Optimal detail						
SUN	MON	TUE	WED	THU	FRI	SAT
p. 28	pp. 29–31	pp. 32–34	pp. 35–40	pp. 40–42		pp. 44–46
elements, compound subatomic particles	isotopes, half-life, avg atomic mass	periodic table, electron diagrams, orbitals	covalent bonds, ionic bonds, & H bonds	chemical rxns, reactants, products, equilibrium	Ch. 2 review	(Ch. 3) polar bonds, H bonds in H ₂ O, properties of H ₂ O
make flashcards and a graphic organizer	watch the video on Canvas, teach aloud to my roommate	make a concept map, color-code the vocab	watch the YouTube video	make an outline of the chapter from my notes	self-quiz, make a sticky note for gaps in mastery	make flashcards and a graphic organizer
Index cards		highlighters			HW and end-of-chapter questions	
30 min	30 min	45 min	45 min	60 min	45 min	30 min

study, the specific activities they will undertake, and the total time devoted to those activities. It is important to note that the total time may be done all at once or in smaller time segments separated by short or extended breaks. Students who struggle to develop details may benefit from a template such as in Figure 5.

Figure 5*Optimal Plan Template*

	SUN	MON	TUE	WED	THU	FRI	SAT
Page #s							
Subtopics							
Strategy/Skill							
Resources & Materials							
Time needed							

Electronic Calendar Input

So far, students have identified required readings for the exam, ranked them by perceived difficulty, allocated calendar days, and estimated the time needed per day to complete specific self-selected study tasks. At this point, students should schedule these times into their preferred electronic calendar to visualize available time segments alongside other commitments such as attending other classes, going to work, or exercising. This step often leads to an adjustment of time for academic and personal needs, developing students' self-regulatory skills in prioritizing obligations and creating balance.

Coaching Students Through Time-Management Dilemmas

It is highly likely that students will offer reasons that they are unable or unwilling to use a skill or strategy such as the one in this article. It is also possible that students will ask about shortcuts in the process, pressing the instructor on the necessity and specificity

of each step. Here are four common student comments and some considerations for how the instructor might respond.

"I already study a lot." One common objection from students is that they lack time to study more than they are already doing. It may be beneficial to remind students that the concept of "studying" will need to be metacognitively self-evaluated. Students have not likely considered the extent to which their past efforts were efficient or effective. Having the students complete a formal self-assessment (such as the *LASSI* or *MSLQ* mentioned earlier) may help students broaden their understandings of variables that contribute to efficient and effective strategies. In the context of this article's recipe approach, the instructor may also compare trying this exam preparation strategy example to encountering a new and unfamiliar food, "Try it before saying, 'No, thank you.'"

"Is the paper calendar really necessary?" In addition to the advantages of hand-writing discussed in the previous section, in Gray's experience, a two-stage calendar process results in a more realistic schedule that students are more likely to follow. Students increase self-awareness of their available time and energy.

"I have a job." Being employed helps students to meet a variety of wants and needs. Sometimes work hours seem to consume students' time and energy to the detriment of academic success. If this is the case, they may wish to consider the following options: trimming their budget, cutting back on work hours, accessing

institutional resources for personal and academic supplies, and learning more about institutional financial aid options.

“I’m taking a lot of credit hours.” It is possible that finding time to prepare for all classes adequately is difficult, even after students adjust other commitments such as work hours and social plans. If this happens, students may benefit from connecting with an academic advisor who can guide them through the advantages and disadvantages of maintaining or dropping a class.

Conclusions and Recommendations

Although no quantitative or qualitative investigations have been conducted to date to validate this specific recipe’s use with students, informal feedback, according to Gray, has conveyed enthusiasm for the recipe because students can tailor aspects of the process to fit their own needs, strengths, and weaknesses. That noted, the literature would benefit from quantitative additional intervention studies on aspects of strategic learning that focus on self-regulatory and metacognitive processes across disciplines and student demographics (e.g., Amzil, 2014; Maftoon & Alamdari, 2020). Findings from intervention research may lend support to the anecdotal evidence that the time an instructor gives to explicit study strategy instruction is not just *spent on* students, but it is *invested in* students.

This systematic self-regulatory time-management approach with the embedded metacognition requires students to be accountable

for their learning. Doing this work can enable students to experience a decisive shift in mindset (e.g., Dweck, 2006) and understand that their academic performance is linked to their behavioral efforts. One way to facilitate this shift is to give students—especially underconfident, underprepared students—concrete tools they need, such as this one, to become more confident, independent learners.

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The Learning Assistance Review (TLAR), the national peer reviewed official publication of the National College Learning Center Association (NCLCA), publishes scholarly articles and reviews that address issues of interest to learning center professionals (including administrators, teaching staff, faculty, and tutors) who are interested in improving the learning skills of postsecondary students. Primary consideration will be given to articles about program design and evaluation, classroom-based research, the application of theory and research to practice, innovative teaching and tutoring strategies, student assessment, and other topics that bridge gaps within our diverse profession.

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Review Process

Author(s) will receive an e-mail notification of the manuscript receipt. The review process may include a peer-review component, in which up to three members of the TLAR editorial board will review the manuscript. Authors may expect the review process to take about three months. Authors may receive one of the following reviewing outcomes:

- accept with minor revisions
- revise and resubmit with editor's review only
- revise and resubmit for second full editorial board review
- reject

As part of the reviewing correspondence, authors will be electronically sent the reviewers rankings and general comments on one document and all the reviewers' contextual markings on one manuscript. Manuscript author(s) must agree to be responsible for

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NCLCA Membership Information

The National College Learning Center Association defines a learning center at institutions of higher education as interactive academic spaces which exist to reinforce and extend student learning in physical and/or virtual environments. A variety of comprehensive support services and programs are offered in these environments to enhance student academic success, retention, and completion rates by applying best practices, student learning theory, and addressing student-learning needs from multiple pedagogical perspectives.

Staffed by professionals, paraprofessionals, faculty, and/or trained student educators, learning centers are designed to reinforce the holistic academic growth of students by fostering critical thinking, metacognitive development, and academic and personal success.

Join NCLCA

NCLCA seeks to involve as many learning center professionals as possible in achieving its objectives and meeting our mutual needs. Therefore, the NCLCA Executive Board invites you to become a member of the Association.

The membership year extends from October 1 through September 30. The annual dues are \$50.00. We look forward to having you as an active member of our growing organization.

Membership Benefits

- A subscription to NCLCA's journal, *The Learning Assistance Review*
- Discounted registration for the annual fall conference and Summer Institute
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- Voting privileges
- Opportunities to serve on the Executive Board
- Special Publications such as the *Resource Directory* and the *Learning Center Bibliography*
- Opportunities to apply for professional development grants
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The National College Learning Center Association (NCLCA) is an organization of professionals dedicated to promoting excellence among learning center personnel. NCLCA welcomes any individual interested in assisting college and university students along the road to academic success.

As an official publication of the National College Learning Center Association (NCLCA), *The Learning Assistance Review (TLAR)* seeks to foster communication among higher education learning center professionals. Its audience includes learning center administrators, teaching staff, professional or student worker tutors, consultants, mentors, faculty members, and administrators interested in improving post-secondary students' learning skills.

TLAR aims to publish scholarly articles and reviews that address issues of interest to a broad range of academic professionals. Primary consideration will be given to articles about program design and evaluation, classroom-based research, applying theory and research to practice, innovative teaching strategies, student assessment, and other topics that bridge the gaps within our diverse and growing profession.