STUDENT CHOICES: ONLINE VERSUS IN-PERSON TUTORING OPTIONS

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Access to free, high-quality, institutionally provided tutoring services can be critical to the success of university students. When the pandemic forced university tutoring operations to close or move online, many chose to move operations online. The Fall 2021 semester saw the return of in-person tutoring at many institutions; however, online options remained in place to serve students who may not be able to participate in-person. This created more equitable access to a critical student support. We collected data on which format students chose at two research-focused institutions. At one institution, visits were split at 47% online and 53% in-person. In contrast, visits at the other institution were split at 5% online, and 95% in-person. We will discuss the courses with the highest usage in each format and explore why students may be choosing one format over the other.

Keywords: Undergraduate education; Instructional Activities and Practices; Online and Distance Education; Equity, Inclusion, and Diversity

Tutoring services supply essential support for students, helping them to succeed in college mathematics classes. Although professional tutoring is available outside of the university, such services are not financially accessible to all students. University-based tutoring centers offer services to students at no additional cost. Access to high-quality online tutoring services can be critical to the success of students, especially those who are first-generation, are from low-socioeconomic backgrounds, or are facing other challenges to making in-person meetings. In this paper, we discuss students' usage of in-person and online tutoring options at two large research-focused institutions. Further, we will examine how this data may inform future tutoring structures.

Background

Institution-based mathematics tutoring services play a necessary role in preserving equitable access to resources among students. Student use of tutoring resources has been correlated with an increase in final course grades (Byerley et al., 2018; Rickard & Mills, 2018; Xu et al., 2001) and with improvements in persistence, retention, and degree completion (Astin, 1993; Pascarella & Terenzini, 1991, 2005; Rheinheimer et al., 2010; Rheinheimer & Mann, 2000; Rouche & Snow, 1977). First-generation college graduates have reported needing to work harder than their peers to attain the same level of achievement, and minoritized students have reported that lacking a sense of belonging presented a significant challenge to persistence in college (Richardson &

Skinner, 1992). Mathematics tutoring centers act as an academic scaffold for struggling students, allowing instruction to be tailored to the needs of the individual students (Anghileri, 2006) while also helping students develop their mathematical identities through social interaction (Bjorkman & Nickerson, 2019). Access to quality tutoring services is likely to play a significant role in student achievement in the coming years, as it is projected that secondary school students' performance in reading and mathematics will suffer as a result of interrupted instruction due to school closures (e.g., related to the pandemic or weather events), particularly in less affluent areas (Chetty et al., 2020; Kuhfeld et al., 2020).

Existing research points to the importance of tutor training both for in-person and online tutoring (Fitzmaurice et al., 2016; Johns & Mills, 2021; Simão et al., 2008; Turrentine & MacDonald, 2006). Lepper and Woolverton (2002), in a comparison of the practices of expert tutors, identified characteristics of and techniques used by those tutors during tutoring sessions. The behaviors identified in these expert tutors include cognitive, metacognitive, and affective pedagogical strategies and considerations which focus not only on the academic content under consideration but also emphasize the importance of study skills and student mindsets. Research on students' success in school (Blackwell et al., 2007; Boaler, 2013; Cohen & Sherman, 2014; Dweck, 2007; Good et al., 2003; Moser et al., 2011) has shown that non-cognitive or motivational factors including students' mindsets and beliefs about themselves as learners, their feelings about school, and their ability to self-regulate "can matter even more than cognitive factors for students' academic performance" (Dweck et al., 2014, p. 2). Students who work with a tutor tend to use prior knowledge, monitor their progress, utilize effective learning strategies, and seek help more often than those who do not – practices which lead to improved performance on assessments and development of mental models (Azevedo et al., 2008). The role played by tutors is much more than simple presentation of content; effective tutors also provide emotional support and help students learn how to self-regulate and develop productive mindsets about themselves as learners. Tutoring practices, like those discussed above, are known to be effective in the traditional, face-to-face tutoring environment, but in light of the COVID-19 pandemic, many tutoring centers moved operations online and will likely continue to provide their services either entirely or partially in an online environment to meet the needs of their students.

Theoretical Framing

We view tutoring from the perspective of Weisbord's Six-Box Model of how organizations function (Weisbord, 1976). The six boxes are: 1) Purpose, 2) Structure, 3) Relationships, 4) Rewards, 5) Leadership, and 6) Helpful Mechanisms. For this report, we focus on the dimensions of *purpose*, what "business" we are in, and *structure*, how we divide up the work. The purpose of our university tutoring centers is to provide students access to free, high-quality tutoring, and our structure consists of dividing the work between in-person and online offerings. Each of these dimensions is influenced by the environment (i.e., forces from the outside that cannot be controlled) in which it exists.

Weisbord suggested collecting data through observations, surveys, interviews, and readings (of written records) to assist in determining discrepancies between what people say and what people do as well as how the organization exists and how it ought to exist.

An organization should have *helpful mechanisms* that monitor, identify and revise any of the other boxes in Weisbord's model, as needed, to make the organization more effective. In this study, we report on the deliberate use of institutional data to study the university students' usage of and satisfaction with their mathematics tutoring centers in a pandemic era. We will consider if using this data is a helpful mechanism to identify how university tutoring centers might

optimally fulfill their purposes considering structural changes implemented to benefit students. In terms of Weisbord's model, our research question is: How might student attendance at in-person and online tutoring sessions be used as a helpful mechanism to support the purposes and structures of tutoring centers? We then speculate on other mechanisms that would be helpful in determining the optimal structures that might help two different universities achieve their organizational purposes.

Context and Data Collection

The data presented here is part of a larger project examining the online tutoring experience. As part of this larger study, training materials for online tutors are being developed and tested with the goal of providing an online tutoring experience that is more comparable to in-person tutoring. Here, we are examining how students' choices of tutoring experience (in-person or online) may inform an institution of how well their structures are fulfilling their purposes with respect to tutoring offerings. Data for this paper include the number of visits to in-person and online tutoring sessions and a student experience satisfaction survey sent to those who attended online sessions.

We tracked the number of student visits to tutoring services provided by the mathematics departments at two large, research-focused universities, U1 and U2, during the Fall 2021 semester. Student visits to the mathematics tutoring centers were tracked via EAB's Navigate and TutorTrac, respectively, for U1 and U2. For in-person visits, students' university ID cards were swiped when they entered and exited to capture information about the mathematics course in which they were enrolled, and the time spent in the tutoring center. Online visits captured this data through a manual entering of the student's ID number by the tutor on duty. At the conclusion of the semester, data were downloaded, summarized, and analyzed.

It should be noted that students who attend in-person tutoring are not necessarily working with a tutor for the entirety of their visit. It is common for students to sit in the tutoring center working on problems independently and only work with a tutor as questions arise. In contrast, in the online environment, students are more likely to be working with a tutor for the duration of their tutoring center visits. Hence, while time spent in the tutoring center (in-person and online) is tracked, we only consider the number of visits in our analysis here. Tracking time spent in the tutoring center is valuable for determining operating hours and physical space considerations.

All online tutors were provided with a Samsung Galaxy Tab S6 Lite tablet to use for their tutoring sessions. Students who used the online tutoring services at U1 and U2 received a 3-question satisfaction survey. Students were asked: 1) Please rate the overall quality of your tutoring session (on a scale of 1 to 5), 2) Please indicate whether the technology allowed for effective interactions with your tutor (on a scale of 1 to 5), and 3) Is there anything else we should know to help serve you better in the future?

The satisfaction survey was sent only to users of the online tutoring services. In-person tutoring has a proven track-record of helping students succeed, and large numbers of students at U1 and U2 used these services pre-pandemic. The purpose of the current study was to determine how the online tutoring environment differed from the in-person, with a focus on how technology facilitates tutor-student interactions.

U1 Context

U1 is a research-focused institution in the mid-Atlantic region of the U.S. with a total enrollment of about 21,000 undergraduate students. It is approximately 50% residential, with mostly freshmen living on campus. U1 has two campuses, Campus A and Campus B, about 2 miles apart. The mathematics tutoring center is located on Campus A in the same building as the

mathematics department and offers drop-in in-person tutoring. Although most math courses are offered on Campus A, only about 9% attend their mathematics class in the same building as the mathematics tutoring center and 25% of students enrolled in a math class attend their class on Campus B.

Most tutors were undergraduate students. All tutors (in-person and online) participated in tutor training with sessions occurring both synchronously and asynchronously online. This training consisted of an initial one-on-one meeting with the tutor coordinator to discuss tutoring basics, regular written self-reflections on the tutor's own practice, and the analysis of recorded mock tutoring sessions. Online tutors were encouraged to enroll in a separate one-credit hour course so that those who were working in the online environment received additional training on how to tutor online and how to effectively use technology to facilitate interactions between students and tutors.

At U1, in-person and online tutoring was offered throughout the semester. In-person tutoring was offered all semester, Monday – Friday from 10am-3pm for a total of 375 hours (63% of available tutoring hours). Online tutoring was offered all semester Sunday – Thursday from 6pm-9pm for 225 total hours (38% of available tutoring hours). Online tutoring sessions were conducted via Zoom. All students, regardless of whether they were enrolled in in-person or online classes, could attend either in-person or online tutoring.

U2 Context

U2 is a research-focused institution in the southwest region of the U.S. with a total enrollment of about 23,000 undergraduates. It is 29% residential, with most freshmen residing on campus. U2's mathematics tutoring center offers drop-in tutoring. U2's in-person tutoring center is located on the main floor of the building where about 75% of its math classes are offered and where all mathematics instructors' offices are located.

The tutors are a mix of faculty, graduate students, and undergraduate students. The graduate and undergraduate tutors undergo training. All tutors attend 6 hours of general training on tutoring prior to their first semester, of which 1 hour is dedicated to online tutoring. Graduate students take 30 hours of content training throughout their first year to qualify to tutor for the different courses served by U2's center. The graduate student tutors have an opportunity at the beginning of the year to reduce the number of hours of training if they pass one or more of the content exams. Undergraduate tutors earn raises for each additional content training they attend and exam they pass. U2's online tutors were selected from experienced undergraduate tutors who were also working, or had worked before, as in-person tutors. Online tutors receive additional training on how to tutor online, including how to use digital devices to display written or digital renderings of graphs, equations, tables, and writing for students to see.

Like U1, U2 offered both in-person and online tutoring options throughout the semester. At U2, in-person tutoring was offered on weekdays (Monday-Thursday, 10am-5pm and Fridays, 10am-2pm) for 479 hours (67% of available tutoring hours) during the semester while online tutoring was offered on weekday evenings (Monday-Thursday, 5pm-9pm) and Sunday afternoons (3pm-7pm) for 232 hours (33% of available tutoring hours). Online tutoring sessions were conducted via Zoom. All students, regardless of whether they were enrolled in in-person or online classes, could attend either in-person or online tutoring.

It should be noted that during the first year of the pandemic, when tutoring was only offered online, both U1 and U2 saw a significant decrease in the number of students seeking university provided tutoring services. Johns and Mills (2021) reported a similar phenomenon at 25 other universities.

Findings

We report on student enrollment and tutoring usage for the courses in two tracks: STEM intending and non-STEM intending. Within these tracks, we examine the data for the course of: College Algebra (STEM vs. non-STEM), Precalculus/Trigonometry, Calculus I, Calculus II, Calculus III, and Applied Calculus. While the general student populations at the two campuses are very similar, they make different choices regarding how they attend tutoring.

In-person Versus Online Usage

Table 1 displays the number of students enrolled in each course and the number of tutoring visits by course and modality. Note that the number of students enrolled in the courses under consideration at U1 (3,986) is almost twice as many as the number of students enrolled in those same courses at U2 (2,171). We observe that even though U2 has fewer students enrolled in these courses, the number of tutoring visits is significantly higher than those of U1. This equates to about 0.5 visits per student at U1, and 2.3 visits per student at U2. Further, we observe that the number of in-person tutoring visits at U1 (1,084) is approximately one-fourth that at U2 (4,679). For online tutoring visits, U1 had about two-and-a-half times as many visits (969) as U2 (372). Hence, we see that U2's students more frequently availed themselves of tutoring services and students heavily favored the in-person tutoring experience. In contrast, U1's students did not use tutoring services as often but used online and in-person tutoring services almost equally.

Table 1: Population and Tutoring Attendance for Algebra, Precalculus/Trigonometry and Calculus Courses

Track	Course	U1				U2			
		Course Population		Tutoring Visits		Course Population		Tutoring Visits	
		in-person	online	in-person	online	in-person	online	in-person	online
		n=3535	n=451	n=1084	n=969	n=1950	n=221	n=4679	n=372
STEM	Coll Algebra	466	14	44	118	344	31	551	43
	Precalc/Trig	159	75	136	24	421	23	1020	61
	Calculus I	731	118	187	282	542	57	2028	143
	Calculus II	240	50	120	89	194	63	678	87
	Calculus III	368	39	29	36	449	47	402	38
Non-STEM (Applied)	Coll Algebra	589	35	471	264	*	*	*	*
	Calculus	982	120	42	44	*	*	*	*

*Since U2 had no regular online offerings for non-STEM classes; such data were not considered.

Table 2 shows the percentages of students enrolled in each course modality and the percentage of tutoring visits utilized by those students. The majority of U1's students (88.7%) were taking math courses in person, and the majority (62.5% of possible hours) of U1's tutoring was offered in-person, while U1's in-person tutoring accounted for about half (52.8%) of its tutoring attendance.

The majority of U2's students (89.8%) were taking College Algebra, Precalculus/Trigonometry, and Calculus courses in person, and the majority (67.4% of possible hours) of U2's tutoring was offered in-person, while U2's in-person tutoring accounted for 92.6% of its normal tutoring attendance.

Table 2: Percentage of Tutoring Visits by Population for Algebra, Precalculus/Trigonometry and Calculus Courses

Track	Course	U1	U2

		Course Population		Tutoring Visits		Course Population		Tutoring Visits	
		in-person	online	in-person	online	in-person	online	in-person	online
		n=3535	n=451	n=1084	n=969	n=1950	n=221	n=4679	n=372
STEM	Coll Algebra	13.2	3.1	4.1	12.2	17.6	14.0	11.8	11.6
	Precalc/Trig	4.5	16.6	12.5	2.5	21.6	10.4	21.8	16.4
	Calculus I	20.7	26.1	17.3	29.1	27.8	25.8	43.3	38.4
	Calculus II	6.8	11.1	11.1	9.2	9.9	28.5	14.5	23.4
	Calculus III	10.4	8.6	2.7	3.7	23.0	21.3	8.6	10.2
Non-STEM (Applied)	Coll Algebra	16.7	7.7	43.5	27.2	*	*	*	*
	Calculus	27.8	26.6	3.8	4.5	*	*	*	*

U2 also offered special tutoring opportunities either one or two evenings before coordinated exams (for both STEM and non-STEM mathematics classes). For each exam, there were two types of review opportunities: an online evening facilitator-centered review session that was followed by an in-person "After Dark" tutoring session. Over the course of the Fall 2021 semester, the online review sessions were offered for 20 hours, and the After Dark in-person tutoring was offered for 30 hours. The attendance at these review opportunities (which is in addition to the numbers for regular tutoring provided in Table 1) was 1,058 for the online reviews and 1,507 for the in-person tutoring. The majority of U2's review opportunities (60% of possible hours) was offered in-person and accounted for 58.8% of the student visits to special tutoring opportunities. U2's online reviews accounted for 41.2% of its attendance at review opportunities and accounted for 40% of the possible hours to special tutoring opportunities.

Satisfaction Survey

We received 130 responses to the satisfaction survey, over 90% of which were from U1. The results of the survey suggest that students were generally pleased with their online tutoring experiences. Overall, 79% (24% and 55%, respectively) of survey responses rated the tutoring session as "very effective" or "extremely effective." 86% (24% and 62%, respectively) of survey responses indicated that their tutor's available technology "very effectively" or "extremely effectively" facilitated their interactions in the online tutoring environment.

In line with the numerical results of the survey, when students provided comments, they were often positive, though students also left negative feedback. Among the positive comments, students complimented their tutors: "[My tutor] was incredibly helpful"; "My tutor was FANTASTIC and incredibly helpful." Others mentioned specific teaching strategies employed by their tutors: "She asked me to re-explain the problem to her, which helped me really understand the concept." Within the negative comments, students cited errors made by their tutor: "Tutor didn't do the problem right, misled me for my homework." and a desire for longer sessions and more one-on-one tutoring (as opposed to small groups), as well as factors beyond the tutors' control ("Internet connection was terrible.", "…a way to have multiple people sharing screens in zoom"). Students also sometimes requested that the tutoring center hire additional tutors for specific courses.

Discussion

As Weisbord (1976) noted, helpful mechanisms should exist to monitor, identify, and inform revision of the other boxes in the Six-Box model. The attendance and survey data we collected serves as a helpful mechanism, providing feedback on the purposes and structures of the tutoring centers at U1 and U2. These data allowed us to monitor and identify what format students chose

when seeking tutoring. We acknowledge that during some of these visits, particularly in-person centers, students may spend minimal time interacting with tutors and are using the space to study and work independently, knowing help is near. The data from U1 highlights that their students use the two tutoring structures (in-person and online) almost equally. In contrast, the data from U2 shows that their students are much more likely to attend in-person tutoring. Furthermore, the survey data collected suggests that students who utilized the university's online mathematics tutoring services largely found their experiences beneficial. For those students who did not find their experiences as fulfilling, the reasons they cited were mostly beyond the tutors' control.

Students at the different sites used the in-person and online environments in very different proportions. The locations of U1's and U2's mathematics tutor centers may help explain students' choices of tutoring modality. Though U1 has a larger number of residential students than U2, it witnessed a significantly higher rate of online tutoring attendance than U2. We hypothesize that this disparity may be due to U1 being split across two campuses. The tutoring center at U1 is located on Campus A, but many students live and take classes on Campus B, which sits approximately 2 miles away, making it difficult to visit the tutoring center in person for some students. For these students, online tutoring provides an option to receive help between classes on Campus B or during other times when reaching Campus A may be challenging or inconvenient. Even though the number of U2 residential students is lower than U1's, the number of students who live close to campus, either as part of the Greek system or in off campus apartments, is quite large. So, almost all undergraduate students walk or drive to campus then stay on campus for their classes.

Data from the satisfaction survey serves as a helpful mechanism by identifying components of the tutoring structures that students appreciated as well as others they would like to see changed. Some of the feedback provided by students about online tutoring is reminiscent of feedback often received about in-person tutoring; sometimes tutors are fantastic, and sometimes tutors make mistakes. Focusing on novel feedback, we were able to distinguish between aspects of the online tutoring experience that are within the control of tutors and tutoring centers and those that are beyond our control. For example, students' access to quality internet is beyond the control of tutors and tutoring centers. However, tutoring centers can place an emphasis on ensuring that tutors are provided with appropriate equipment (e.g., pen-enabled tablets) and ensuring that there are sufficient numbers of tutors for courses with particularly high demand for tutoring. In our future work, we will investigate the specific ways in which the use of appropriate equipment fosters online tutoring interactions.

The purpose of the tutoring centers at U1 and U2 is to provide access to free, high-quality tutoring. Our data suggest that students do find value in attending, as both institutions have many repeat users of their tutoring services, and those who completed the satisfaction survey largely rated their experiences positively. For students at U1, it appears that both the in-person and online tutoring options are equally valuable, as they use these services more or less equally. As mentioned above, this could be due to the difficulty in traveling between campuses at U1. We also believe U1 and U2 are offering a better online experience than 6 - 12 months ago. Although our initial implementation of online tutoring saw significantly diminished usage, we have seen higher traffic in recent months. In our future research, we will continue the use of the satisfaction survey.

In sum, we found that students valued the online option equally with the in-person option at U1, while students at U2 clearly favored the in-person option for regular tutoring but attended the in-person and online evening review sessions prior to exams in the same proportions the

hours were offered. This data allows each institution to examine the modalities of their tutoring services and adjust to better suit their student populations.

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References

Anghileri, J. (2006). Scaffolding practices that enhance mathematics learning. *Journal of Mathematics Teacher Education*, *9*(1), 33-52.

Astin, A. (1993). *What Matters In College: Four critical years revisited*. Jossey-Bass.

Azevedo, R., Moos, D. C., Greene, J. A., Winters, F. I., & Cromley, J. G. (2008). Why is externally-facilitated regulated learning more effective than self-regulated learning with hypermedia? *Educational Technology Research and Development*, *56*, 45-72.

Bjorkman, K., & Nickerson, S. (2019). This is us: An analysis of the second groups within a mathematics learning center. 22nd Annual Conference on Research in Undergraduate Mathematics Education, Oklahoma City, OK.

Blackwell, L. S., Trzesniewski, K. H., & Dweck, C. S. (2007). Implicit Theories of Intelligence Predict Achievement Across an Adolescent Transition: A Longitudinal Study and an Intervention. *Child Development*, *78*(1), 246-263.

Boaler, J. (2013). Ability and Mathematics: the mindset revolution that is reshaping education. *FORUM*, *55*(1), 143-152.

Byerley, C., Campbell, T., & Rickard, B. (2018). Evaluation of Impact of Calculus Center on Student Achievement. 21st Annual Conference on Research in Undergraduate Mathematics Education, San Diego, CA.

Chetty, R., Friedman, J., Hendren, N., Stepner, M., & Team, T. O. I. (2020). *How Did COVID-19 and Stabilization Policies Affect Spending and Employment? A New Real-Time Economic Tracker Based on Private Sector Data* [Working Paper].

Cohen, G. L., & Sherman, D. K. (2014). The Psychology of Change: Self-Affirmation and Social Psychological Intervention. *The Annual Review of Psychology*, *65*, 333-371. https://doi.org/10.1146/annurev-psych-010213-115137

Dweck, C. S. (2007). Is Math a Gift? Beliefs That Put Females At Risk. In S. J. Ceci & W. Williams (Eds.), *Why aren't more women in science? Top researchers debate the evidence* (pp. 47-55). American Psychological Association. https://doi.org/https://doi.org/10.1037/11546-004

Dweck, C. S., Walton, G. M., & Cohen, G. L. (2014). *Academic Tenacity: Mindsets and Skills that Promote Long-Term Learning*. B. M. G. Foundation.

Fitzmaurice, O., Cronin, A., Ni Fhloinn, E., O'Sullivan, C., & Walsh, R. (2016). Preparing Tutors for Mathematics Learning Support. *MSOR Connections*, *14*(3), 14-21.

Good, C., Aronson, J., & Inzlicht, M. (2003). Improving Adolescents' Standardized Test Performance: An intervention to reduce the effects of stereotype threat. *Applied Developmental Psychology*, *24*, 645-662. https://doi.org/10.1016/j.appdev.2003.09.002

Johns, C., & Mills, M. (2021). Online Mathematics Tutoring During the COVID-19 Pandemic: Recommendations for Best Practices. *PRIMUS : problems, resources, and issues in mathematics undergraduate studies*, *31*(1), 99-117. https://doi.org/10.1080/10511970.2020.1818336

Kuhfeld, M., Soland, J., Tarasawa, B., Johnson, A., Ruzek, E., & Liu, J. (2020). *Projecting the Potential Impacts of COVID-19 School Closures on Academic Achievement*. Brown University.

Lepper, M. R., & Woolverton, M. (2002). The Wisdom of Practice: Lessons Learned from the Study of Highly Effective Tutors. In *Improving Academic Achievement* (pp. 135-158). Academic Press.

Moser, J. S., Schroder, H. S., Heeter, C., Moran, T. P., & Lee, Y.-H. (2011). Mind Your Errors: Evidence for a Neural Mechanism Linking Growth Mind-Set to Adaptive Posterror Adjustments. *Psychological Science*, *22*(12), 1484-1489. https://doi.org/10.1177/0956797611419520

Pascarella, E., & Terenzini, P. (1991). *How College Affects Students: Findings and Insights From Twenty Years of Research*. Jossey-Bass.

Pascarella, E., & Terenzini, P. (2005). *How College Affects Students: A Third Decade of Research* (Vol. 2). Jossey-Bass.
Rheinheimer, D. C., Grace-Odeleye, B., Francois, G. E., & Kusorgbor, C. (2010). Tutoring: A Support Strategy for At-Risk Students. *The Learning Assistance Review*, *15*(1), 23-34.
Rheinheimer, D. C., & Mann, A. (2000). Gender Matching, Floor Effects, and Other Tutoring Outcomes. *Journal of Developmental Education*, *24*(2), 10-18.
Richardson, R. C., Jr., & Skinner, E. F. (1992). Helping First-Generation Minority Students Achieve Degrees. *New Directions for Community Colleges*, *80*, 29-43.
Rickard, B., & Mills, M. (2018). The Effect of Attending Tutoring on Course Grade in Calculus I. *International Journal of Mathematical Education in Science and Technology*, *49*(3), 341-354.
Rouche, J., & Snow, J. (1977). *Overcoming Learning Problems*. Jossey-Bass.
Simão, A. M. V., Flores, M. A., Fernandes, S., & Figueira, C. (2008). Tutoring In Higher Education: Concepts and Practices. *Sísifo: Educational Sciences Journal*(7), 73-86.
Turrentine, P., & MacDonald, L. (2006). Tutoring Online: Increasing Effectiveness with Best Practices. *NADE Digest*, *2*(2), 9-18.
Weisbord, M. R. (1976). Organizational Diagnosis: Six Places To Look for Trouble with or Without a Theory. *Group & organization studies*, *1*(4), 430-447. https://doi.org/10.1177/105960117600100405
Xu, Y., Hartman, S., Uribe, G., & Mencke, R. (2001). The Effects of Peer Tutoring on Undergraduate Examination Scores in Mathematics. *Journal of College Reading and Learning*, *32*(1), 22-31.