Investigating Student Confusion and Self-Efficacy with SLOs to Support Student Learning

Jennifer Burke Reifman, Mikenna Sims, Mik Penarroyo, Loren Torres, & Mahlia White
University of California, Davis

Abstract

The following study employed a student-centered methodology to understand undergraduate student confusion with student learning outcomes (SLOs), or the statements that specify what students should know or be able to do by the end of a course. Through understanding and investigating student confusion with undergraduate student researchers, we have found that confused students may experience negative impacts to their self-efficacy around their coursework. Via qualitatively coded interview transcripts, we were also able to identify the tools students use to clarify their sense of confusion with SLOs, allowing us to make pointed student-centered recommendations to learning center programs to better support students.

Keywords: self-efficacy, learning centers, tutoring

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The work of supporting students in learning centers is often complex and multidimensional. Literature has noted that "learning centers have evolved into a multifaceted professional operation that addresses student success in higher education" (Truschel & Reedy, 2009, p. 20), suggesting their essential space in supporting student learning. Primary to that work are the ways in which learning center programs aid in helping students succeed in their higher education coursework. While research suggests that learning centers often support historically disadvantaged students or students with multiply marginalized identities via writing support (Sturman, 2018), help with identifying academic obstacles (Soria & Stebleton, 2013), and assessing academic interventions (Osborne et al., 2019), this study offers a different perspective to inform learning center practices by exploring how students navigate confusion and unclear learning expectations in their coursework, as well as the impacts these experiences have on their emotions and self-efficacy. Learning centers, as central locations for student support, play a central role in helping students navigate unclear course expectations, as well as the breadth of emotions that accompany the assessment of student learning.

Using a student-centered research model, we have found that students may arrive at learning center programs with varying

degrees of understanding regarding course expectations and a wide range of emotional responses about their learning. Specifically, the present study works to explore the following research questions:

1) How do undergraduate students know what faculty expect them to learn?

2) How do undergraduate students respond when they experience confusion around what they are expected to learn?

In investigating how students understand what they are expected to learn using a unique methodological model that places undergraduates students as co-creators of research, we have found that students do experience confusion about course learning outcomes, which negatively impacts both their motivation in the course and their self-efficacy or "people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives" (Bandura, 1994, p. 1). As a principal resource available to aid in student success in institutions of postsecondary education, learning centers can better support student success by better understanding the student experience in relation to student learning outcomes (SLOs).

Literature Review

Across the literature on the assessment and support of student learning, SLOs are defined as statements of what students should know, be able to do, and value (Palomba & Banta, 2001). SLOs also "include the knowledge, skills, attitudes and habits of mind that

students develop and take with them" (Suskie, 2004, p. 96). Hussey & Smith (2003) posit that SLOs make "opaque and woolly ideas" (p. 222) about learning more explicit, suggesting that one of the principal functions of SLOs is to provide clarity to students. SLOs have additionally been defined as "what a student should be able to know and do at a defined stage of a programme [sic] and/or within a defined element in the programme [sic] of study" (Ellis, 2004, as cited by Holmes, 2019, p. 2), and are seen as fundamental to establishing transparent practices in higher education (Adam, 2002).

Research on SLOs has become increasingly necessary in understanding student learning and meeting the missions of many higher education institutions (Barclay McKeown & Ercikan, 2017). Specifically, research on student learning reinforced the importance of clear instruction (Goldman et al., 2017) and highlighted the connection between clear teaching behaviors and SLOs (Titsworth et al., 2015). Additionally, Titsworth et al. (2015) found that "higher levels of clarity are associated with higher levels of student learning" (p. 394).

However, while educational researchers and practitioners have a working definition of SLOs, research suggests that students may have a "limited interpretative framework, which severely restricts the potential for learning outcomes to fulfill their assumed communicative functions" (Erikson & Erikson, 2019, p. 2301), furthering the notion that SLOs need to be clearly communicated,

explicitly connected to curriculum, and readily accessible to students.

On our campus and in this study, we use the following definition of SLOs:

> [s]tatements that describe the knowledge, skills, and/or dispositions students are expected to demonstrate as the result of instruction, programs, curricula, and/or activities. They focus on what students should be able to demonstrate/produce/represent as a result of successfully completing a course or academic program. (*Glossary*, n.d.)

SLOs & Student Self-Efficacy

When considering the relationship between SLOs and student self-efficacy, which refers to "people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives" (Bandura, 1994, p. 1), Pajares (2003) suggests that "[learning] outcomes interpreted as successful raise self-efficacy," whereas "those interpreted as failures lower it" (p. 140). That is, when students have positive experiences with assessment and successfully meet SLOs, they are more likely to experience increased levels of self-efficacy. Winkelmes (2016) similarly contends that instructional clarity and transparency provide positive assessment experiences for students and lead to higher academic confidence, mastery of the skills that employers value most when hiring, and a sense of belonging; these benefits are

most substantial among low-income, first-generation, and underrepresented students. In contrast, a lack of transparency regarding SLOs may lead to student confusion and decreased self-efficacy (Pajares, 2003), as well as "emotional impact[s] that lasts many years and affects career choices, inhibits new learning and changes behaviour [sic]" (Falchikov & Boud, 2007, p. 144). This is also reflected in previous work (Immordino-Yang & Damasio, 2007) that has linked emotional turmoil with difficulty in learning and cognition, as well as self-efficacy. Most recently, such emotional impacts were also reported by Wass et al. (2020), who found that many of the students in their study experienced strong negative emotions about assessment which resulted in stress, personal and academic sacrifices, and negatively impacted students' well-being. Given this, it is essential to consider the support systems in place to help students successfully navigate the assessment of their learning, as well as how to help them best demonstrate their achievement of SLOs.

Learning Centers as Student Support

Learning center programs support students by facilitating peer mentoring (Deshler et al., 2019), increasing student confidence (Knight et al., 2016), and scaffolding tutoring (Valkenburg, 2010) to support student success in connection with course learning outcomes. The learning center's role in supporting student understanding and demonstration of SLOs is essential for fostering

positive emotions surrounding students' abilities to succeed in their courses. This is particularly important to consider, as positive experiences with the assessment of SLOs have the potential to aid in student retention and achievement (Eubanks, 2021; Wang et al., 2012) and can bring about higher levels of student engagement, motivation, and self-efficacy by "creating a positive outcome expectancy and an efficacy expectancy" (Hill & Stitt-Bergh, 2021, p. 2). That is, a history of positive assessment-related experiences may lead students to acquire increased levels of self-efficacy regarding their ability to achieve a desired learning outcome.

Despite this, there is presently limited literature that explores student perceptions of the impact confusion has on students' self-efficacy and their ability to meet SLOs, as well as the role learning centers can play in mitigating this confusion. This may be because, traditionally, the assessment of SLOs has been treated as "a technical activity that involves measurement with little impact on those assessed" (Falchikov & Boud, 2007, p. 144). Wass et al. (2020) similarly contend that, although assessment research broadly is robust, "less attention has been given to students' emotional experiences of assessment to ensure that their emotional reaction optimizes, rather than inhibits, learning outcomes" (p. 190). The impact confusion may have on undergraduate students' self-efficacy is an important dimension of assessment research to investigate. As Bandura et al. (2001) write, "[u]nless people believe

they can produce desired outcomes by their actions, they have little incentive to act or to persevere in the face of difficulties" (p.187). In higher education institutions, if undergraduate students experience assessment negatively and leave classrooms confused, they may lack the necessary self-efficacy to persevere and successfully meet their SLOs. As learning centers help support student progress towards meeting SLOs (Collins, 2009; Diederich & Schroeder, 2008), it is essential that learning centers additionally consider ways through which they can provide students with effective support as they work towards achieving academic success as well.

Methodological Framework

This study employed a methodological approach that affords unique insights into student experiences. While much of the research on SLOs and the assessment of learning works to understand student experiences, the following study was designed, implemented, and analyzed by a team of trained undergraduate researchers with the guidance of graduate and faculty researchers. As detailed in Burke Reifman et al. (2022), this particular model of research sees students as co-creators of research and employs an iterative member-checking process in which students are consulted throughout the research process in meaningful ways. While quantitative reasoning is extremely important in understanding the impacts of programs and pedagogical approaches, our qualitative

methodological approach centers on the experiential narratives of students.

Methods

Context

The study was conducted at a large, public, land-grant, research-intensive university in California, which serves approximately 31,000 undergraduates, 7,700 graduate, and 900 professional students. As a large, four-year, land grant institution, this campus houses a diverse population that includes 32% Asian/Pacific Islander students, 23% Hispanic/Latinx students, 23% white students, 17% international students, 4% Black or African American, and 2% other/unknown. Over half of undergraduate students receive need-based funding and about 42% identify as first-generation students.

Data Collection

The data were gathered as part of a two-part study sponsored by the teaching, learning, and assessment department on campus. The study began with a mixed-design survey administered between February and March 2020 and was followed by semi-structured interviews with students who indicated interest. The survey included 27 scaled-response items designed to elicit an accurate depiction of the following: 1) how confident students felt about the Winter 2020 academic quarter, 2) tools and resources that were most beneficial for students to understand learning outcomes, 3) the

timing that SLOs were made apparent to them, and 4) which tools and resources were utilized when SLOs were made unclear. The survey allowed participants to identify their interest in small-group interviews, which were later organized. The semi-structured interviews (Merriam & Tisdell, 2015) used inductively and deductively constructed questions to better understand student experiences and perceptions of SLOs. Undergraduate student researchers used a common protocol and conducted each interview, allowing participants to have conversations with peers rather than university faculty. Overall, undergraduate student researchers interviewed 30 undergraduate participants in 17 separate interviews that lasted between 15-45 minutes.

Throughout our interviews, we asked six questions (see Appendix A) which revolved around expectations of undergraduate student learning; namely, SLOs and students' personal academic, professional, and other learning goals. The interviews were video recorded to maintain the integrity of participant responses (Merriam & Tisdell, 2015). Recordings of the interviews were then transcribed and anonymized by an online audio-to-text transcription service called Temi, which promised 90-95% accuracy. Transcripts were then cleaned by undergraduate researchers to further ensure accuracy.

Participant Recruitment

To promote participation in the survey, undergraduate research fellows relied on non-probability sampling, or snowball sampling, to reach potential respondents. The undergraduate researchers used three primary methods to encourage participation. These methods included promoting the survey on social media through personal and academic accounts, distributing postcards (which had a link to the survey) at popular locations on campus, and emailing faculty, staff, and mailing lists with the request that they promote the survey among their students, and advisees.

Participants

Participants for the in-person interviews were recruited through a question at the end of the survey, which asked if they would be interested in participating in a follow-up interview. From the 464 analyzable survey responses, 90 undergraduate students agreed to a follow-up interview. The interviews were held in person in March 2020. Thirty of the 90 undergraduate students who indicated interest ultimately participated in 17 separate interviews with groups of two to three students in each; these participants represented 14 different majors on campus and represented largely sophomore, junior, and senior year cohorts. The interview cohort was representative of campus demographics: 60% identified as female and 40% as male; 25% were Asian/Pacific Islander students, 30% were Hispanic/Latinx students, 20% were white students, 10%

were international students, 10% were Black or African American, and 5% other/unknown; and, nearly 60% identified as first-generation college students.

Analysis

Once transcripts were cleaned and anonymized, the research team reviewed each transcript and memoed throughout each reading to process initial thoughts (Merriam & Tisdell, 2015). From memoing, an initial set of descriptive codes (Miles & Huberman, 1994) were created to address specific mentions of resources for SLOs. Initial rounds of coding yielded 27 codes that could be described as a combination of descriptive codes where the code "summarizes in a word or short phrase—most often as a noun—the basic topic of a passage of qualitative data" (Saldaña, 2015, p. 87) and in vivo codes to "keep the data rooted in the participant's own language" (Saldaña, 2015, p. 6). Examples of in vivo codes include "Treadmill of School" and "Clear Path." This process also included simultaneous coding where codes overlapped to identify a single piece of datum, as certain descriptive codes seemed to connect to others in a recurring pattern (Saldaña, 2015).

Through several rounds of axial coding (Charmaz, 2014) a codebook was finalized and broken into seven parent codes, including "Resources for Recognizing SLOs," "Experiences with SLOs," "Perceptions of School," etc. Coders were then normed with the codebook through several group rectification sessions. With a

finalized codebook, each of the 17 transcripts was coded by two separate readers who later met for code rectification using a spreadsheet to document the code agreement. Once each transcript had been rectified, the collection of codes was analyzed for larger themes, consulting the frequency of codes and a corpus of excerpts, for a more holistic understanding of student responses.

Methodological Limitations

The following findings present limitations in terms of sampling size and are not intended to be generalizable, but rather exemplify a unique student perspective. We also acknowledge that there may be concern about potential issues of bias due to including undergraduate students as researchers; while we do note that bias can undermine findings, our research follows an anti-foundational epistemology that does not "adopt any permanent, unvarying (or 'foundational') standards by which truth can be universally known" (Lincoln et al., 2011, pp. 119-120), but rather values understanding and representing an experience.

Findings

Findings across the transcripts indicated that students experienced strong emotional reactions when their learning felt obscured to them. The following sections detail particular codes related to these emotional responses and end with recommendations that may impact learning center practices. It is important to note that we did not find variation in responses from

students across demographic identities, despite considering this in our analysis.

Intuiting, Guessing

The "intuiting/guessing" code was used to capture the mental process that students undergo when encountering confusion around learning outcomes.

Table 1
Code Excerpts from "Intuiting, Guessing"

"Learning how to read research and apply it to the field that you're working in has been a big part of every class that I've taken. **So, I think that that is probably one of the goals.** Whether or not they like stated explicitly for my major."
"But a lot of them [instructors], not a lot, but some–they don't make it as clear. And so, I'm taking your class. **What am I supposed to learn? Am I supposed to take this with me?**"
"I would say it definitely gives me a challenge to be able to figure out what I'm expected to know, and it definitely makes my studying a lot more difficult just because **I don't know what I should be studying.**"

Interviews demonstrated a range of individual approaches in student methodology when attempting to understand confusing learning objectives. Some participants facilitated an internal discussion regarding the most recurrent themes within class material and manifested a somewhat tangible construction of instructors' expectations which could be applied to their individual goals. In this, students would describe what they think they were learning and what evidence they used to make this inference, asking

questions like: “What am I supposed to learn? Am I supposed to take this with me?”

Impacts on Self-Efficacy

The code “impacts to self-efficacy” was used to describe moments when students expressed difficulties in engaging with material resulting in perceived consequences. This elicited a pattern of behavioral responses wherein negative self-attitudes pertaining to educational success hampered their overall self-efficacy.

Table 2

Code Excerpts from “Impacts to Self-Efficacy”

“I thought, ‘I should have these certain expectations.’ And then when those expectations are not met, you become very **disappointed and when you're disappointed, you're less motivated to work.**”
“I'll definitely feel lost, and I feel like the class is way harder than maybe it should be. And I feel like that will affect me when it comes to midterms I think, because if I don't know what I'm supposed to be learning, then **I don't think I'll be able to have a successful midterm grade**.”
“In some classes, I know what's expected of me and I know it's going to be applicable to the rest of my education and my career in law. But my other class, like the stats class, I'm the least motivated to do any of the work because it's already not really making sense. It's just, **it's also discouraging not knowing what the outcomes are supposed to be…**”
“Like, am I getting all that I need out of the major out of the classes so I can do my major right. Or like **it's kind of difficult cause I feel like I don't know what I know what's expected of me, but I don't know what to learn**.”

Participants also used similar descriptive language throughout the transcriptions to convey this development of demotivation and

disconnect. In these excerpts, students would comment on how their confusion made them less certain about how to be successful in their classes. For example, one participant noted that when their expectations about the class were incorrect “you become very disappointed and when you're disappointed, you're less motivated to work.” Notably, students displayed feelings of self-disappointment and frustration when it posed a negative impact on their grades. Other participants described feelings of dissatisfaction from a lack of discernible instructor expectations saying, “It's kind of difficult because I feel like I don't know what I know what's expected of me, but I don't know what to learn.”

Treadmill of School

The “treadmill of school” refers to the idea that a student feels that they’re constantly doing work that essentially has nothing to do with their post-graduation life and holds little to no significance on their actual knowledge of a topic. One student voiced that for some classes, it ends up feeling like a “treadmill” in the sense that they only need to learn and do enough to get through the class with a decent grade, instead of focusing on retaining any of the knowledge.

Table 3
Code Excerpts from "Treadmill of School"

"And a lot of the time I think that it's like easy to lose sight of that you are like there are expected learning outcomes and there's a reason that you're in that class and it's supposed to be like building knowledge and I think it's really easy to get caught up in like, okay, **I just need to get through this class and like get a good grade in it so I can get my degree**."
"I think not knowing and then maybe not knowing in the middle and towards the end can get frustrating and then you're like, and then you just want to finish the class just because you have to get the units and you have to get the grade, **because you're finishing it to finish it**."
"I also think a lot of times we don't take that time to reflect back on things like: what am I going to be able to do or what are my end goals? **So, then we're just stuck in kind of like the treadmill of school**."

Others described a mentality where they were "finishing to finish it" and simply going through the motions of the class "to get through."

Resources for Clearing Confusion

Finally, we used several codes to understand the tools that students used to clarify this confusion and, potentially, restore their sense of self-efficacy. Our codes helped us to understand that students frequently turn to their peers to understand SLOs and will also use exams or high-stakes assessment moments to clarify what they should be learning in the course (See Appendix C, Table 4). Both peers and exams were named 58% of the time in the transcripts. However, in every analyzed interview, students stated that their course syllabi and specific pedagogical practices (e.g.,

including SLOs on lecture slides) were instrumental in alleviating student confusion. Particularly, 100% of transcripts named syllabi as a source of clarifying confusion, particularly if the course was clearly outlined and described. Further, 100% of transcripts named strategies that students found helpful in clarifying confusion, including discussing complex course readings, seeking clarification about writing prompts and other assignments, creating study guides, and applying course content to real-world scenarios.

Table 4
Frequency of Tools used for Clarification

Tool for Clarifying Confusion	Occurrences in Transcripts
Peers	58% (10 of 17)
Exams	53% (9 of 17)
Syllabus	100% (17 of 17)
Pedagogical Support/Practices	100% (17 of 17)

Recommendations for Learning Center Professionals

The interview excerpts above, while not representative of a large student population, do reveal the ways that student self-efficacy and confidence can be impacted by confusion about designated learning outcomes. The coded excerpts suggest that when students are sometimes left to guess the purpose of a class, wherein students intuited expectations incorrectly, their motivation and belief in their

own success are impacted. Further, losing sight of learning outcomes seems to cause students to participate in school as if it were a series of tasks to be completed, rather than a learning environment that necessitates engagement and motivation. These findings are in line with research that indicates that self-efficacy can directly impact a learner's belief in their ability to succeed (Bandura et al., 2011; Yusuf, 2011) suggesting the importance of clarity of SLOs for all students.

Effective assessment for undergraduate students requires educators, faculty, administrators, and student support services to develop and sustain an appropriate system in which students have a clear sense of their expectations in classes. For students to have this clarity, SLOs must be explicitly tethered to course content and students must be supported by academic programs in demystifying their confusion. Transcriptions from interviewees suggest that a potential solution to this problem would be engaging undergraduates in extracurricular opportunities that help students make connections between SLOs and their future careers.

Perhaps most telling for learning center professionals are the tools students use to clear confusion. Specifically, the findings from our project have suggested that to meet the needs of our students, learning center programs at our institutions could offer more space for peers to support each other in understanding SLOs and their connection to course content and assessment. Additionally, based

on student responses, we could also offer more support for students to read and navigate syllabi. Further, the pedagogical practices and supports that students mentioned, like the scaffolding of reading and writing assignments, analyses of writing prompts, the practice of creating clear study guides, and so on, are key elements for learning center tutors and programs to understand. Overall, through investigating student confusion with undergraduate co-researchers, we believe we were able to identify ways to more effectively support students.

Conclusions & Future Recommendations for Learning Center Research

As a result of our findings, we would suggest that learning centers should aim to research *with* students about student experiences to develop student-centered learning supports and understand ways they can amplify the tools that students already access. This may avoid what other research has found that "students who felt less comfortable in and supported by the university environment also associated academic help-seeking with personal feelings of inadequacy and inferiority" (Winograd & Rust, 2014, p. 34). We suggest that identifying these moments of personal inadequacy through methodologies that help mitigate power differences could create more student-centered learning and support.

Learning center scholarship is working to shift methodological practices in this vein. Angotti and Rosenberg (2018) suggested collaboration with research faculty as a means of collecting more nuanced data to inform learning center programs; our findings suggest that further collaboration with students as researchers and co-creators of research reveals another layer of data. This aligns with calls from others about collaborating with students to support their efforts in undergraduate coursework, emphasizing a data-driven approach to understanding support (Hodes et al., 2015). In general, researching with students around their confusion can provide an important new data point for learning centers to consider in their efforts to support student success.

References

Adam, S. (2002, July 1-2). Using learning outcomes: A consideration of the nature, role, application and implications for European education of employing learning outcomes at the local, national and international levels. [Conference presentation] *United Kingdom Bologna Seminar*, Edinburgh, Scotland.

Angotti, R., & Rosenberg, K. (2018). Strategic collaboration for richer assessment: Educational data mining to improve learning centers. *Learning Assistance Review*, *23*(2), 115-131.

Aziz, A., Yatim, J., & Yusof, K. (2012). Evaluation on the effectiveness of learning outcomes from students' perspectives. *Social and Behavioral Sciences*, *56*, 22-30. https://doi.org/10.1016/j.sbspro.2012.09.628

Bandura, A. (1994). Self-efficacy. In V. S. Ramachandran (Ed.), *Encyclopedia of Human Behavior* (1st ed., pp. 71-81). Academic Press.

Bandura, A., Barbaranelli, C., Caprara, G. V., & Pastorelli, C. (2001). Self-efficacy beliefs as shapers of children's aspirations and career trajectories. *Child Development, 72*(1), 187-206. https://doi.org/10.1111/1467-8624.00273

Barclay McKeown, S., & Ercikan, K. (2017). Student perceptions about their general learning outcomes: Do they add up? *AERA Open, 3*(2), 1-20. https://doi.org/10.1177/2332858417701712

Bevitt, S. (2015). Assessment innovation and student experience: A new assessment challenge and call for a multi-perspective approach to assessment research. *Assessment & Evaluation in Higher Education*, *40*(1), 103-119. https://doi.org/10.1080/02602938.2014.890170

Burke Reifman, J., White, M., & Kalish, L. (2022). Students as researchers and participants: A model of iterative member-checking for inclusive, equity-centered assessment research. *Intersection: A Journal at the Intersection of Assessment and Learning*, *3*(1), 1-25.

Charmaz, K. (2014). *Constructing grounded theory*. SAGE Publications.

Collins, M. R. (2009). Writing their own history: Student learning outcomes in a multilingual university writing classroom. *Learning Assistance Review, 14*(1), 55-70.

Deshler, J., Fuller, E., & Darrah, M. (2019). Supporting students through peer mentoring in developmental mathematics. *Learning Assistance Review*, *24*(1), 87-112.

Diederich, N. A., & Schroeder, S. J. (2008). Effect of writing centers and targeted pairings on students repeating first-year composition. *Learning Assistance Review, 13*(2), 17-26.

Erikson, M. G., & Erikson, M. (2019). Learning outcomes and critical thinking: Good intentions in conflict. *Studies in Higher Education*, *44*(12), 2293-2303. https://doi.org/10.1080/03075079.2018.1486813

Eubanks, D. (2021). Assessing for student success. *Intersection: A Journal at the Intersection of Assessment and Learning, 2*(2), 1-11.

Falchikov, N., & Boud, D. (2007). Assessment and emotion: The impact of being assessed. In D. Boud & N. Falchikov (Eds.), *Rethinking assessment in higher education* (1st ed., pp. 154-166). Routledge. https://doi.org/10.4324/9780203964309

Glossary. (n.d.). Student Learning Outcomes Assessment. Retrieved October 19, 2022, from https://assessment.ucdavis.edu/glossary#L

Goldman, Z. W., Cranmer, G. A., Sollitto, M., Labelle, S., & Lancaster, A. L. (2017). What do college students want? A prioritization of instructional behaviors and characteristics. *Communication Education*, *66*(3), 280-298. https://doi.org/10.1080/03634523.2016.1265135

Hill, Y., & Stitt-Bergh, M. (2021). Connecting assessment with teaching through faculty capacity building: An example of an oral communication assessment project. *Intersection: A Journal at the Intersection of Assessment and Learning, 2*(3), 1-18.

Hodes, J. S., James, T., Martin, G., & Milliner, K. (2015). Go for the win: A collaborative model for supporting student-athletes. *Learning Assistance Review*, *20*(1), 47-60.

Holmes, A. G. (2019). Learning outcomes: A good idea, yet with problems and lost opportunities. *Educational Process: International Journal*, *8*(3), 159-169. https://doi.org/10.22521/edupij.2019.83.1

Hussey, T., & Smith, P. (2003). The uses of learning outcomes. *Teaching in Higher Education, 8*(3), 357-368. https://doi.org/10.1080/13562510309399

Immordino-Yang, M. H., & Damasio, A. (2007). We feel, therefore we learn: The relevance of affective and social neuroscience to education. *Mind, Brain, and Education*, *1*(1), 3-10. https://doi.org/10.1111/j.1751-228X.2007.00004.x

Knight, M. L., Johnson, K. G., & Stewart, F. (2016). Reducing student apprehension of public speaking: Evaluating effectiveness of group tutoring practices. *Learning Assistance Review*, *21*(1), 21-54.

Lincoln, Y. S., Lynham, S. A., & Guba, E. G. (2011). Paradigmatic controversies, contradictions, and emerging confluences, revisited. *The Sage Handbook of Qualitative Research, 4*(2), 97-128.

Merriam, S. B., & Tisdell, E. J. (2015). *Qualitative Research: A Guide to Design and Implementation*. John Wiley & Sons.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative Data Analysis: An Expanded Sourcebook*. SAGE Publications.

Osborne, J. D., Parlier, R., & Adams, T. (2019). Assessing impact of academic interventions through student perceptions of academic success. *Learning Assistance Review*, *24*(1), 9-26. DOI:10.24059/olj.v24i3.2142

Palomba, C. A., & Banta, T. W. (2001). *Assessing Student Competence in Accredited Disciplines: Pioneering Approaches to Assessment in Higher Education*. Stylus Publishing.

Pajares, F. (2003). Self-efficacy beliefs, motivation, and achievement in writing: A review of the literature. *Reading & Writing Quarterly*, *19*(2), 139-158. https://doi.org/10.1080/10573560308222

Rowe, A. D., Fitness, J., & Wood, L. N. (2015). University student and lecturer perceptions of positive emotions in learning. *International Journal of Qualitative Studies in Education*, *28*(1), 1-20. DOI:10.1080/09518398.2013.847506

Saldaña, J. (2015). *The Coding Manual for Qualitative Researchers*. SAGE Publications.

Soria, K., & Stebleton, M. (2013). Immigrant college students' academic obstacles. *Learning Assistance Review, 18*(1), 7-24.

Sturman, H. (2018). Best practices to support generation 1.5 student writers. *Learning Assistance Review, 23*(2), 71-86.

Su, Y., & Chung, Y. H. (2015). Understanding the emotional reactions and exploring the professional development of college students based on reflections. *Teaching in Higher Education*, *20*(3), 285-299. https://doi.org/10.1080/13562517.2014.1001834

Suskie, L. (2004). *Assessing Student Learning: A Common Sense Guide*. John Wiley & Sons.

Titsworth, S., Mazer, J. P., Goodboy, A. K., Bolkan, S., & Myers, S. A. (2015). Two meta-analyses exploring the relationship between teacher clarity and student learning. *Communication Education, 64*(4), 385-418. https://doi.org/10.1080/03634523.2015.1041998

Truschel, J., & Reedy, D. L. (2009). National survey: What is a learning center in the 21st century? *Learning Assistance Review, 14*(1), 9-22.

Valkenburg, J. (2010). Joining the conversation: Scaffolding and tutoring mathematics. *Learning Assistance Review*, *15*(2), 33-41.

Wang, N., Wilhite, S. C., Wyatt, J., Young, T., Bloemker, G., & Wilhite, E. (2012). Impact of a college freshman social and emotional learning curriculum on student learning outcomes: An exploratory study. *Journal of University Teaching & Learning Practice*, *9*(2), 1-20. https://doi.org/10.53761/1.9.2.8

Wass, R., Timmermans, J., Harland, T., & McLean, A. (2020). Annoyance and frustration: Emotional responses to being assessed in higher education. *Active Learning in Higher Education*, *21*(3), 189-201. https://doi.org/10.1177/1469787418762462

Winkelmes, M. (2016, March). *Helping faculty use assessment data to provide more equitable learning experiences.* Urbana, IL: University of Illinois and Indiana University, National Institute for Learning Outcomes Assessment (NILOA).

Winograd, G., & Rust, J. P. (2014). Stigma, awareness of support services, and academic help-seeking among historically underrepresented first-year college students. *Learning Assistance Review, 19*(2), 19-43.

Yusuf, M. (2011). The impact of self-efficacy, achievement motivation, and self-regulated learning strategies on students' academic achievement. P*rocedia-Social and Behavioral Sciences, 15*, 2623-2626. https://doi.org/10.1016/j.sbspro.2011.04.158

Appendix

Interview Protocol

The following questions were asked in each interview:

- How confident are you that you know:
    - what you are expected to learn by the time you graduate from your major?
    - what you are expected to be able to do by the time you graduate from your major? [Optional follow-up: Please say more about that.]
- In the courses you are taking right now, how confident are you that you know what instructors expect you to learn by

the end of the quarter? [Optional follow-up: Please say more about that.]

- In your own words, please tell me how you find out what you are expected to learn in a course.
- What do you do when you are not clear about a course's learning goals?
- How does knowing or not knowing the learning objectives of a course influence you? [If further clarification is needed, "For example, how you approach learning in the class or what you think about course."]
- What else would you like the research team to know?