

At-Success Students' Affordance and Barriers to Help-Seeking in an Active Learning College Algebra Course

Colby A. Lamb
University of Nebraska-Lincoln

Despite reforms, some College Algebra students are still “at-success”: they can be identified early in the semester as having a higher likelihood of not passing or completing the course (Wakefield et al., 2018). This interview study of 3 at-success College Algebra students explores the hypothesis that there are pedagogical and environmental factors to whether at-success students engage in help-seeking behaviors that could increase their chance at success. I examine: What affordances and barriers to help-seeking do at-success students describe when talking about performance in a college algebra class? Karabenick and Berger’s (2013) process of help-seeking was used as a framework for the themes found using interpretative phenomenological analysis. I propose an adaptation and extension of Karabenick and Berger’s framework as a result of this study.

Keywords: help-seeking, college algebra, active learning, mathematical microaggressions

Undergraduate drop, fail, and withdrawal (DFW) rates in college algebra can be as high as 50% and even over 50% (Gordon, 2008; Herriot & Dunbar, 2009). Efforts to improve student outcomes have largely focused on active learning (Freeman et al., 2014; Theobald et al., 2020), including professional development for the Graduate Student Instructors (GSIs; Deshler et al., 2015; Rasmussen et al., 2019) who may teach courses with high DFW rates, and course coordination (Rasmussen & Ellis, 2015; Rasmussen et al., 2021). Despite these reforms at the University where this study was conducted, we can still identify college algebra mathematics students early in the semester with a higher likelihood than their peers of not passing (Wakefield et al., 2018).

This study explores the hypothesis that help-seeking (e.g., Karabenick & Berger, 2013) can mitigate the likelihood of not passing the course. It aimed to examine students’ perceptions of in-classroom and out-of-classroom learning supports, systems, and experiences for at-success students. In particular, it explored the phenomenon of help-seeking in an active learning college algebra course with a population of students who were at a higher risk of dropping, failing, or withdrawing from the course.

The research question addressed is: *What affordances and barriers to help-seeking do at-success students describe when talking about performance in a college algebra class?*

Study Context: College Algebra and the “MRA”

At the research site, students are asked to review and master a set of prerequisite skills needed for college algebra and demonstrate mastery by scoring 80% on a “Mastery Review Activity” (MRA; for the validity of cutoff score as predictive of course performance, see Wakefield et al., 2018). Students are allowed to attempt this activity every day over the first two weeks of the semester.

Literature Review and Theoretical Perspective

In this section, I will present a small argument for using the term “at-success” to replace the usual term “at-risk” for the population of students I am exploring. The rest of the literature review will examine what is currently known about help-seeking and the gaps this study hopes to

address.

The Term “At-Success” in Place of “At-Risk”

For higher education professionals and staff to provide services to students who have a higher likelihood of not meeting their educational objectives, the term “at-risk” has often applied to these students (Dix et al., 2020; Horton, 2015; Quinnan, 1997). When higher education professionals who are providing these services were asked to give an operational definition of “at-risk” the answers were diverse (Dix et al., 2020). The various operational definitions for at-risk students have included both academic and non-academic characteristics: academic past academic performance, social background, and both internal and environmental characteristics (Bulger & Watson, 2006; Castro, 2014; Connolly et al., 2017; Dix et al., 2020; Horton, 2015).

The label “at-risk” was initially used within K-12 educational settings (Quinnan, 1997). Unfortunately, the term “at-risk” tends to operational definitions that blame the individual and do not address needed system changes (Quinnan, 1997). Deficit language and thinking displaces all the blame for school failure on the individual. This is victim blaming. Valencia (2010) describes victim blaming as one of the six characteristics of deficit thinking in an educational setting. This type of thinking “absolves institutional structures and inequitable schooling arrangements that exclude students from optimal learning” (Valencia, 2010, p. 18).

For this study, I do not want to view students as being deficient. By examining the phenomena of help-seeking, we can learn what fosters a supportive educational environment and empowers students to navigate barriers they may encounter and move them from being “at-risk” to being “at-success”. This study aims to identify possible factors that can be changed in both course structure and institutional practices to ensure students are “at-success”. The operational definition of “at-success” for this study is given to students who either failed the MRA at the beginning of the course, repeating college algebra, or did not place into college algebra or higher at enrollment into college.

Help-seeking as an Analytic Framework

Help-seeking is considered a form of agency over one’s learning in a particular environment (Nelson-Le Gall, 1981; Nelson-Le Gall, 1985; Karabenick & Berger, 2013). Karabenick and Berger (2013) proposed a model of help-seeking that reflected “stages” (p. 239) where decisions were made that impacted whether a learner pursued help and what type of help they pursued. Each of these “stages” occurs in a “phase” (Zimmerman, 2008, as quoted in Karabenick & Berger, p. 254). These authors emphasized that a particular learner may not experience all stages in a particular environment, and the stages do not occur in any universal order. For most individuals, a combination of these stages may occur at any point in the decision process of whether to seek help (Karabenick & Berger, 2013).

As a starting analytic framework, I used the stages and phases proposed by Karabenick and Berger (2013). I used this framework to describe and characterize help-seeking processes college students use to engage in various assignments and activities in college algebra. Since this phenomenological study uses student interview transcripts as the data source, this framework was only used after interviews with students were first analyzed using Interpretative Phenomenological Analysis (IPA) to find various themes (Smith et al., 2009). The framework was used to explain students’ affordances and barriers to help-seeking; I leave open the possibility of confirming, disconfirming, or revising this model concerning at-success college algebra students’ help-seeking process.

Table 1. Stages of Help-Seeking Process and Three-Phase Model of Self-Regulated Learning

	<u>Stages of Help-Seeking Process</u>	<u>Phase</u>
1	Determine whether there is a problem	Forethought
2	Determine whether help is needed/wanted	
3	Decide whether to seek help (goal)	
4	Decide the type of help	
5	Decide who to ask	Performance
6	Solicit help	
7	Obtain help	
8a	Process the help received- judge or evaluate	Self-Reflection
8b	Process the help received - react to it	

Note. From “Help seeking as a self-regulated strategy” by S.A. Karabenick, and J. L. Berger, 2013, In H. Bembenutty, T. J. Cleary, & A. Kitsantas (Eds.), *Applications of self-regulated learning across diverse disciplines: A tribute to Barry J. Zimmerman*, pp. 237–261.

Methods

Phenomenology

This study was a phenomenological study of help-seeking processes of at-success college students within the context of an active learning college algebra course. To better understand the students’ process of seeking help, it is necessary to hear from the students themselves. Since the goal of this study was to give voice to the participants, understand a phenomenon, and describe the essence of engagement with class activities, this study was well suited for a qualitative design (Creswell & Poth, 2018; Merriam & Tisdell, 2016). Creswell & Poth (2018) describe two types of phenomenology studies, hermeneutic phenomenology and transcendental phenomenology. The sub-approach chosen was hermeneutic phenomenology, which aims to interpret the meaning of a lived experience.

Participants and Data Collection

To interview the targeted audience of students who did not complete the MRA activity or repeating college algebra, or did not originally test into college algebra, about their experiences with help-seeking in completing the MRA and other course activities, students were recruited through two different methods. In the Fall of 2023 and Spring of 2024, students who did not complete the MRA activity at the beginning of the semester were sent an email inviting them to participate in an interview about their experiences in college algebra and taking the MRA. Also during both the Fall of 2023 and Spring of 2024 college algebra students were invited to participate in a survey about their experiences in college algebra. In the survey, students were asked if they would be willing to participate in a follow-up interview about their experiences in college algebra. Students who indicated that they were willing to be interviewed and were from the targeted audience were sent an email to participate in an interview about taking the MRA and their experiences in college algebra. To aid in recruiting, students were paid \$20 for participating in a 30-45-minute semi-structured interview. When using IPA, it is recommended that the number of participants be between three and six due to the intensity of the interviews' analysis. Three participants were recruited.

Table 2. Description of Interview Participants

<u>Name</u>	<u>Gender</u>	<u>Race</u>	<u>Year</u>	<u>Pass MRA</u>	<u>Previous college math course</u>
Amy	Female	White	Sophomore	No	Intermediate Algebra
Jacob	Male	White	Freshman	No	College Algebra
Carmen	Female	White/Mixed	Sophomore	Yes	Intermediate Algebra

Note: Pseudonyms were used to protect the privacy and confidentiality of research participants.

Participants were interviewed individually. A semi-structured interview protocol was used to guide the interviews (Merriam & Tisdell, 2016). The interviews were done over Zoom and recorded and transcribed. Before the recording began, the participants removed their names to protect their anonymity. The transcript was then checked for accuracy. After each interview and cleaning of transcripts, memoing was done to record initial impressions from each interview. The transcripts were then used for analysis using IPA.

Data Analysis

I analyzed interviews in multiple phases. After several readings of an interview, I engaged in three rounds of “noting” (Smith et al., 2009, p. 83). First, I analyzed the transcript for descriptive comments focused on the content of what the participant said. Second, I made linguistic comments focused on exploring the language and specific words used by the participant. Third, I made conceptual, interpretive comments, drawing from my “own experiential and/or professional knowledge” (Smith et al., 2009, p. 89).

After completing all the initial notations and coding, I organized data from each participant’s transcript into a table. Next, I compared all participant tables to identify common patterns. From this, I constructed a merged table of cross-cutting themes. Table 3 includes an excerpt for one cross-cutting theme across all the cases.

After this was done, a summary of recurrent themes was made. These themes and others were then analyzed with respect to the phases of help-seeking (Karabenick & Berger, 2013) as each participant relayed their individual stories.

Results

Several recurrent themes emerged. These themes related to at least one participant's process of help-seeking. I now discuss the themes.

Table 3. Table of Master Theme MRA Purpose as an Assessment or Placement Test

Assessment:

Jacob: *Isn't that like a course readiness assessment*
 Carmen: *I personally think it [MRA] was just busy work, but I could see how it was meant to gauge where we were.*
 Amy: *I felt like it [MRA] was just to give my instructor a baseline of where everyone was at.*

Placement Exam:

- Carmen: *The reasoning they gave us was that it was to make sure that we're actually supposed to be in college algebra. And if we're struggling with anything on the MRA to the point where it showed that we weren't ready for college algebra. They were gonna move us down a class. Move you down to 100A. Which I thought was kind of odd because of the placement exam that we have to take to come into college placed us in college algebra.*
- Jacob: *Don't you have to like test into every math class you take? So I think it's [MRA] kind of redundant. Cause like you already have to like test into the class.*
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Determine Whether There is a Problem.

All three participants did not see the MRA as an activity designed for their benefit. They each framed the activity as an assessment or placement exam. See quotes in Table 3. Amy attempted to pass the MRA. She quickly became overwhelmed with the pace of the course and felt she needed to concentrate on completing her homework. The MRA was not perceived as being equal to her homework even though it had more point value. This perception of the MRA being less important than her homework was conveyed when she responded to a question about any resources she used to prepare for retaking the MRA. Amy said, "I don't think so, because I had already been into the semester. I remember at the very beginning of the semester, I was struggling a lot with math. So I was more focused on that than the MRA." Since the MRA was not perceived for her benefit, she did not prioritize learning the material on the MRA.

Determine Whether Help is Needed/Wanted

Carmen originally did not test in remedial intermediate algebra. Her advisor contacted the mathematics department to arrange for her to retake the placement exam after she reviewed the prerequisite material independently. She then had a sufficient score to enroll in intermediate algebra. She shared that she quickly learned in intermediate algebra that material she thought she knew well from high school, but she had learned incorrectly.

Carmen: I was taught the rules of exponents incorrectly in like high school. Or something like that. So I got to [intermediate algebra] and we were going over the rules of exponents. And I raised my hand. I was called on. I was like 'Are you sure that's how it is? Cause I was taught this in high school, and this isn't how they taught it to me. What's going on here?' And my instructor was like, 'Oh, yeah, no they taught it to you wrong.'

She also shared a story in intermediate algebra when she learned she had previously learned the order of operations incorrectly. Both of these stories had the potential of Carmen feeling threatened about asking for help, but it produced the opposite effect. She was willing to ask questions in class. She would ask questions of both her instructor and peers. She knew from positive engagement with instructors that she may have previously mislearned a topic, and immediate help was needed to correct any potential misunderstandings.

Decide Whom to Ask

The role of identity. An important component of active learning is students engaging with their peers. During this engagement, there is both help-giving and help-seeking. Each of the participants' mathematical identities with their peers impacted their decision on whether to ask

their peers for help. Jacob had previously taken college algebra. He felt confident that he knew the material better than his peers.

Jacob: I know how to do most things because I've already taken this class. But if I didn't know what I was doing, I feel like I'd be really lost. Cause he [his instructor] only does a few problems, and he just kinda lets us on our own. And if no one at your table knew how to do it, you [would] kinda just be completely lost.

He also felt that his role was to help his peers. Jacob stated, "When we finish [individually] the workbook, he [instructor] wants us to [make sure] everyone else in our group [knows] how to do it."

For Amy, she did not pass the MRA. Not passing the MRA impacted her perception of her mathematical abilities in relation to her peers' abilities. Amy stated, "It made me feel so stupid. Because almost, I mean, from what I know, the people I sit with, like most people, passed it ... I should be on the same level." Comments made in class by her instructor and peers also made her feel unconfident enough to let others know she needed help. Amy stated, "When everyone is going around and saying: 'This is so easy, you should know this. This is stuff you've already learned.' It kind of creates an environment that is, you know, questionable." She also stated, "My instructor had said, like, 'this is stuff you had learned [it] in the past, people have taken it, this is so easy.' And then [my] instructor [said] 'It shouldn't be too hard. Like you've already learned this.'" Amy experienced mathematical microaggressions (Su, 2015). These contributed to the identity she formed within the classroom context.

As stated earlier, Carmen learned in intermediate algebra that she had mislearned several mathematical procedures, but she saw her abilities as being the same as her peers'. She stated, "I'm assuming all of my classmates passed it. ... [I] didn't have any problems with it." She was comfortable asking both her instructor and her peers at her table.

Carmen: [I] also talk with like [my table] group. I mainly get to like a problem. I'd be like, I don't know what this problem's asking. And then my classmates would be like, 'Oh, it's either asking this.' And I'd be like, 'Oh, great! Let's you know, do it together.' And we like do it.

She was hesitant about asking questions of her instructor in front of the whole class.

Carmen: I'm not a student that likes [to] ask tons of questions with the whole class.

Because I don't know what pertains to just me or what pertains to the whole class. ...

I don't wanna raise my hand and like stop the whole class.

But during independent group work time, she stated, "I'll ask questions from my instructors."

I will discuss the results related to the steps of the help-seeking process (Karabenick & Berger, 2013): deciding whether to seek help, deciding on the type of help (goal), soliciting help, obtaining help, and processing the help received in the presentation, but not here due to space constraints.

Discussion and Implications

Lack of perception of need was a barrier in the process of help-seeking. All the participants did not see the MRA activity as an activity that was for their benefit. They all framed the activity as either a placement exam or an assessment for their instructor to know the class's current ability. Amy struggled with the MRA and tried to take it twice. She did worse on the second attempt. She did not see the purpose of the MRA and saw it as an assignment not related to her coursework. To have students fully engage with assignments, students need to understand their relevance to their success in learning the course material.

Identity was both an affordance and a barrier in the process of help-seeking (Bergey, 2023). It produced a tension that had the potential of keeping a student from seeking help from their peers. For Amy, it was very clear how her identity kept her from asking questions of both her peers and instructor during class time. For Carmen, she perceived her performance as being parallel with her peers. As a result, she was willing to ask both her peers and instructor for help during class time.

In an active learning course, identity played a significant role in help-seeking during class group work. This result suggests that a student's identity may play a significant role in the help-seeking process within the classroom environment (Gardee & Brodie, 2023). Active learning requires students to engage with each other. For “at-success” students, the role of identity has a greater potential to inhibit help-seeking. Instructors must be aware of the environment that they create in the classroom and how that can help all students be successful.

The data from this study suggest that the process of help-seeking (Karabenick & Berger, 2013) should be expanded to include the role of identity. Students may or may not be cognizant of an evaluation they make about how they may be perceived by their peers before engaging in help-seeking (Bergey, 2023). The classroom norms of discourse also played a role in help-seeking. Amy experienced mathematical microaggressions, which shut down her help-seeking within the active learning environment. She lost all the advantages of active learning.

Further research should observe help-seeking within the group dynamics in an active learning classroom. There is a need to understand what type of norms aid the group dynamics to encourage help-seeking among peers. Group work has been seen as a way to afford students opportunities to seek help. Group cohesion also impacts help-seeking in K-12 settings (Kempler & Linnebink, 2006). This may also be true with college algebra students.

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