



# Research Brief

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## Focus Groups Findings: Students' Experience in Math 54 with Co-Requisite Support

*By Hannah Lawler, Dean of Institutional Research*

### Introduction

A qualitative study was conducted to assess the classroom experiences and support need of students enrolled in the elementary statistics with co-requisite support course (Math 54 + 54C) at Santa Monica College (SMC) during the Spring 2021 semester. Math 54 + 54C is the focus of SMC's project in the 2021 Aspen Institute's California Trustee Fellowship Program. The aim of the trustee fellowship program is to provide district boards with the tools and support to advance a targeted reform on their campuses to improve student outcomes. SMC's board has articulated the following project goal for the district:

*By end of the Spring 2022, decrease the racial equity gaps experienced by Black and Latinx students and increase the success rates of all students enrolled in Math 54 + 54C (4-unit elementary statistics course plus 2-unit concurrent support course)*

In response to the board's project, the SMC math department formed a work group to identify strategies for the project, including research best practices that improve learning and success for Black and Latinx math students. The qualitative study was conducted to generate student experience data to inform the efforts and activities of the math work group.

### Methodology and Participants

Due to the pandemic, all math courses at SMC were offered virtually in Spring 2021. As a result, all focus groups and interviews were conducted via Zoom or by phone. Student focus group participants were recruited by four Math 54 + 54C instructors who volunteered their classroom time for the focus group sessions. These faculty randomly selected approximately five students to meet with

institutional research staff in a Zoom breakout room during a scheduled class meeting. Faculty were not present during the focus group conversations. Participants were informed of the purpose of the study and provided consent information. Students were given the opportunity to leave the study at any time without any consequences. One student did not consent to participate in the study and exited the Zoom breakout room before the start of the focus group questions.

Several students who participated in the focus group offered the names and contact information of peers enrolled in Math 54 + 54C who were interested in participating in the study. Three students were recruited for the study this way and were interviewed one-on-one by institutional research staff. Each focus group and interview session lasted approximately 35-45 minutes each.

A total of 24 students participated in the four focus group discussions or three semi-structured interviews between March and May 2021. A large majority of the study participants identified as Latinx/Hispanic (54%) or Black/African American (25%). For detailed demographic information of the study sample, refer to Appendix B. Students were asked to identify factors and support that facilitate their learning in Math 54, discuss the challenges they face in learning math at SMC, and share ideas for how SMC and faculty can support students like them. Refer to Appendix A for the focus group/interview protocol used in the study.

## Findings: Themes

Focus group and interview discussions were recorded and transcribed, and the results were coded and analyzed. The five main themes from the student focus groups and interviews are summarized below.

- 1) **Students value peer learning and support:** Students indicated that learning with peers and small group activities and study groups were beneficial to their learning experience in their math class.
- 2) **Perceived pace of the math class impacts learning:** Students said that the pace of math classes at SMC is too fast for an optimal learning experience. However, some students offered ways faculty have helped slow the pace of the class and enabled learning.
- 3) **Students are not confident in their math skills:** Students have anxiety about math and are not confident in their math skills which negatively impacts their ability to learn and seek help.
- 4) **Students seek flexibility and empathy from instructors:** Students' lives are complicated, and their outcomes in the course do not accurately reflect their effort or motivation to succeed.
- 5) **Student-faculty interactions and classroom climate directly impact students' Math 54 learning and classroom experience:** Faculty play a key role in creating the type of class climate students say are optimal for learning math.

The themes are discussed with more detail and include examples and student quotes to amplify the five themes of the study.

## #1. Students value peer learning and support

Many students expressed the value of peer-based learning and support. Students indicated that studying and doing homework in small peer groups helped them learn math concepts and successfully complete math problems.

All forms of peer learning are beneficial, however, students emphasized that *structured* peer learning opportunities during class time was most effective in helping them better make sense of and process the information they have learned. One group of students in the same class section shared that they learn by hearing how peers in their instructor-assigned small groups approach homework.

**“When I’m on my own trying to do homework, I get really lost, and I have to watch YouTube videos to help me.”**

-Latino male student

*“When we do our break-out groups during class, those are really helpful because we can talk with our peers and learn other peoples’ method of how they learn and hear other people’s theories. It actually helps a lot to hear from your peers.”*-Latino male student

*“It could be helpful if during class, we have our own breakout rooms so we can work on homework together.”*-White female student, not in the same section

The students in this class section pointed out that the small group activities were most useful right after a lecture or lesson and when the instructor provides explicit prompts to direct the work of the group.

*“It’s really helpful to be in a smaller group after having just learned the lesson. It kind of bridges the gap [between] listening to the lesson on your own, then talking about it and trying out what we learned with others.”*-Latina female student

Some students enrolled in class sections that did not offer structured peer group learning activities have sought out and formed their own groups outside of class. Some students mentioned using Discord, a digital instant messaging platform, to communicate with others in their class about questions about course content they are uncomfortable asking the instructor. Other students formed study groups that meet regularly directly after their class meetings.

*“I don’t know where I would be right now without my group, I would be failing.”*- Black female student

## #2. Perceived pace of the math class impacts learning

“There’s a lot of information that we have to comprehend in such a short amount of time. So I appreciate that this particular teacher slows down a lot and takes the time to make sure we understand each step.”

-Latina female student

“It’s super important to slow down for math, because it kind of compounds on top of itself. What you learn is what you use to find out the solution to later problems. I can get stuck early on in math if the teacher goes too fast, and once you’re a little behind, it stacks on and on.”

-White male student

### Slow Down and Check Understanding Before Moving On

For most students in the study, their enrollments in Math 54 were their second, third, or fourth attempts in the course. A commonly cited reason for dropping the class in previous semesters was the perceived *pace of the class*.

*“This is my fourth time in the class. I dropped before because the class was taught in an extremely fast paced.”*-Black female student

Many students said they felt rushed, in general, in their math classes at SMC. Students appreciated faculty who took time to check in with students’ learning before moving onto new content, including faculty who were willing to repeat themselves or offer teaching concepts in a new way if students need clarification.

*“[The instructor] doesn’t move from one subject to the next quickly. [They] ask the class, ‘do you have any questions, do you feel comfortable with this?’”*-Black male student

A Latina student shared how she perceived her current instructor slowing down and checking understanding as her instructor “caring”: *“I’ve taken Math 54 a few times, but the way this class flows has worked. I never had this kind of experience in math in my entire academic career. It just feels like there’s a lot of care from the teacher”*.

Some students discussed how the format of Math 54 + 54C was beneficial to their learning experience and success in the course. Students expressed that they needed extra time on task that the co-requisite format afforded them. One student (Latino male) had previously taken Math 54 *without* the co-requisite twice before said, *“This way flows better because it’s slower, I am forced to spend more time. I would have taken this class (54C) sooner rather than later”*.

### **Process, Not Answers**

Students said they prefer instructors who not only break up different steps of a math problem, formula, or process, but those who spend adequate time on each step.

Students with negative experiences in their Math 54 class pointed to instructors who “zoomed” or “rushed” through math problems and simply shared the answers to problems, like this Latino male student:

*“I feel like it would be a lot easier if he actually explains a process instead of just giving us answers.”*

### **Outlines and Reviews**

A handful of students said instructor-created documents outlining topics and class activities were useful in helping them take effective notes in class.

*“It’s really helpful that she has our notes ready to go prior to the class [meeting] so you can print them out. I feel like having the [notes] already there for us, even just a gist of it, really helps.”*-Latina female student

In addition, several students emphasized that effective teachers do not assume students have mastered the prerequisite topics before moving onto new content. Students benefited from “reviews” of foundational terms and content before learning new math concepts.

*“Like obviously, we should know something like the scientific method, but sometimes you don’t use things for a while and you kind of forget so I appreciate her not saying ‘oh, we are using the method you already learned’. She actually reviews it so it’s super clear before we move on.”*-Latina female student

*“It’s not realistic to remember things from like four months ago, if you keep putting new information in front of us on a daily basis.”*-White male student

One student (Latino male) recalled a particularly unhelpful instructor saying, *“Oh well, we already reviewed it. Go back and do it on your own”*.

### #3. Students are not confident in their math skills

During the focus group discussions and throughout the one-on-one interviews, many students expressed self-doubt and a lack of confidence in their math skills. These comments were primarily made in the context of other topics and used as qualifiers before sharing an anecdote or opinion about their math class or instructor. Some of the comments included:

- ***“Math is definitely not my strongest suit”***
- ***“Personally, I’m not good at math”***
- ***“When it comes to math, I’m really like not good at it.”***

Students’ general perceptions of math created anxiety, which in turn negatively impacted their learning experiences. In addition, the “scary” (descriptor used by several students) reputation of SMC’s math faculty and

department contributed to increased anxiety for some students. One student (Black female) discussed how her previous experience with math professors created more math anxiety for her:

***“I have insecurities and anxiety with math because of [experiences] with past professors. I feel like a lot of them didn’t have compassion.”***

Among students who expressed not being confident in their math skills, several male students said their low math confidence made them less likely to ask for help. For example:

- ***“I have a hard time reaching out to teachers because I overthink and get anxiety and so forth.”***- White male student
- ***“I’m too scared to ask questions in class.”***-Latino male student

***“Learning math is basically like learning another language. It’s so scary.”***

-Black male student

***“I’m not good in math, and I need a lot of help. I just have a lot of anxiety around statistics in general because it’s my first time taking it.”***

-Black female student

***“I think math professors need to have patience and have to like just be able to calm people’ fear because just the idea of math is so scary for some people.”***-White female student

## #4. Students seek flexibility and empathy from their math instructors

Students discussed needing more flexibility and empathy from their math instructors. Students who are successfully making progress in their Math 54 + 54C classes shared that their instructors offered flexible deadlines for assignments and tests which tremendously relieved their stress and subsequently accommodated their busy lives. In sharing what has helped her in the class so far, a Black female student shared:

*“[The professor] doesn’t put stress on [deadlines], ‘cause we are already stressed out enough. She would say things like, ‘obviously, I want your homework done by certain times, but I’ll keep it open afterwards ‘cause I know things happen, life happens.”*

Students across all focus groups and interviews emphasized wanting faculty to be more understanding and empathetic of their complicated lives and competing priorities.

*“Even though we are at home, it doesn’t mean we have more time on our hands. We need to take care siblings, parents, or elderly family who are sick, so I feel like professors*

*should be more understanding.”* -

Latina female student

*“Teachers tend to think their classes are the most important thing. But I’m just being realistic, when it comes down to missing a shift at my job and potentially not being able to pay rent and posting this one discussion board that is due that day, I’m probably going to choose my job.”* -Latino male student

Students were asked to share one thing they would like math faculty to know about students like them. A recurring response to the question related to wanting faculty to know that students care about their learning in the math class, and missing assignment deadlines and lack of engagement in class discussions do not accurately reflect their motivation in the class.

*“If I’m not participating as much as I should be or not completing things on time, I hope they don’t think I don’t care. It doesn’t mean we don’t care about our grades, we are trying our best to balance it all. The grade we end up with doesn’t reflect the amount of determination that we have.”* -White female student

**“I work full time and I take this class during the day, I am paying for it out of my own pocket. This class is important to me, and I want to make sure that I get everything I’m supposed to out of it.”** -Latina female student

## #5. Student-faculty interactions and classroom climate directly impact students' Math 54 classroom and learning

It is apparent from the focus group discussions and interviews with students that student-faculty interaction and classroom climate are consequential in terms of students' Math 54 + 54C experience. Students were asked open-ended questions about their successful experiences and the barriers/challenges they face in their current and past math classes. However, the students spent most of the focus group or interview sessions discussing their experience with specific faculty, even when unprompted or when explicitly encouraged to speak about non-faculty related factors (for example, family support and campus resources). This finding provides evidence for the importance of focusing on professional development for math faculty.

**"I'm 24 right now, I haven't taken a math class since I was 17. I was so scared. But this is my first math class at SMC, and my teacher is great. I feel confident about my math now because of her teaching method, I lucked out with this professor."** -White male student

### **Effective instructors create a welcoming, non-intimidating classroom environment.**

Students spoke, at length, about the role of math faculty in creating the right conditions and environment for a positive and optimal learning experience. Their perceived classroom environment directly translated into the tone of the focus group and interview sessions themselves. The overall tone in the sessions with students who perceived their current Math 54 classroom climate to be

positive was calm and comfortable. Throughout the discussions, these students appeared to confident and cheerful, and smiled a lot at one another. In contrast, the tone in the sessions made up of students who reported a negative classroom environment in their current Math 54 class was tense and urgent, and a few students cried or appeared distressed.

According to the students in the focus group and interviews, faculty who engage in the following behaviors create a welcoming and positive learning climate in the classroom:

- **Encourage students to ask questions**  
Faculty who normalize asking questions frequently create a safe space for students to grapple with difficult math material without judgment or anxiety.

***"I feel like she does her best to make it a safe space by constantly reminding us that it's okay to ask questions. When you do ask a question, she does a great job of thoroughly explaining it. And if you don't understand it, she'll do it again, you know? I'm not scared to ask questions, even if I think it's dumb."*** -Black male student



*“My teacher tells those us of us who are shy or embarrassed to ask questions to write it down and then invites us to meet after class so she can answer them in private.”*-Latina female student

- **Expresses availability outside of class time and connects students to resources**

Faculty who regularly communicate that they are available to students outside of class time are perceived as helpful and caring. Students shared multiple anecdotes of getting “unstuck” in their learning of difficult math concepts because an instructor took time to walk through math examples or other topics during office hours or other scheduled meeting time. In addition, some students shared that they learned about academic support services directly through the math instructors who made time during class time to announce the available resources.

*“Even if it’s the smallest things, she doesn’t make you feel like it’s an inconvenience, and she still takes time to go over the small things”*. -Latina female student

- **Communicates belief in their ability to succeed and commitment to their success**

Several students discussed the quality of faculty interaction and communication impact their motivation and self-efficacy (student’s

belief in their capability of succeeding). A female, Latina student recalled:

*“My professor sent us an email saying, I posted your grades to this point, I understand that some of you are ahead, some of you are doing just okay, and some of you are behind; but for those of you who are behind, this is what you can do to improve’. It was very encouraging and made me want to keep going, even if I didn’t do good on the first exam”*.

Another student recalled a time when she made a mistake while working through a math problem in class, and how the faculty responded created an open and supportive environment:

*“My teacher said, it’s okay to make mistakes, I make mistakes, everything will be okay. That just made me want to try my best.”*-White female student

In contrast, one student shared that she was planning to drop her Math 54 + 54C class because her current math instructor made her feel hopeless:

*“Every time I have a question, [the instructor] tells me, ‘watch my video’. I want you to teach me, not watch a video. I feel so hopeless and disappointed.”* -Black female student

## Non-responsiveness of faculty creates a frustrating learning experience for students.

A theme repeated by many students was the responsiveness of faculty by email and other communication, and how non-responsiveness creates confusion and barriers to their learning.

*“We just had an exam. I was honestly confused, so I messaged the professor in the chat like they told me to. I messaged twice, and they never replied. When I take a class, I expect that the professors put in as much effort as I am. I don’t want it to be one-sided.”* -

Latino male student

## Recommendations

The students’ experiences and perspectives, while not generalizable to all students, offered key insights for some actionable findings for the college and math department:

Focus Group and Interview Themes	Potential Action
<b>Students value peer learning and support</b>	Many students said that small peer groups enhanced their learning in the math class. Faculty could respond to this finding by assigning small groups in the classroom and providing opportunity for students to work on math problems, etc., together to ensure students receive the peer-to-peer interaction they seek.
<b>Perceived pace of math class impacts learning</b>	A frequent challenge cited by students about their math learning is the fast pace of the class. Faculty could respond to this finding by reviewing and considering ways to slow the pace of Math 54 + 54C.
<b>Students are not confident in their math skills</b>	Many students are not confident in their math skills and experience anxiety learning math which interferes with their learning and help-seeking behaviors. One action faculty could take is to connect students to resources and strategies to help reduce math anxiety. Example: <a href="#">video about reducing math anxiety produced by students and faculty at Anoka-Ramsey Community College in Minnesota</a> .
<b>Students seek flexibility and empathy from instructors</b>	Students’ lives are complicated, and their outcomes in the course do not accurately reflect their effort or motivation to succeed. The college can support faculty in their professional learning, including topics such as cultural empathy.
<b>Student-faculty interactions and classroom climate directly impact students’ Math 54 learning and classroom experience</b>	Faculty play a key role in creating the type of classroom climate that students say are optimal for their learning. The college can support faculty in their professional learning, including topics such as effectively communicating care, validation, and mattering to racially minoritized students and fostering an inclusive classroom environment.

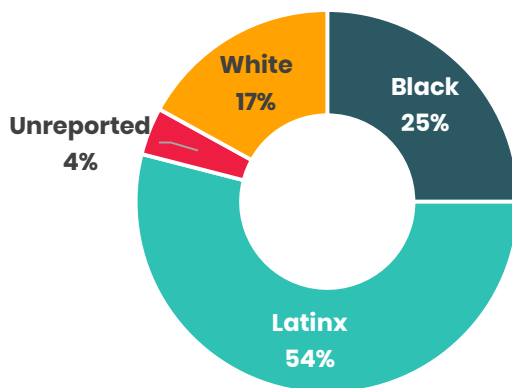
# Appendix A: Focus Group/Interview Questions

1. What has been working for you? What has led to successful learning in this course so far? Behaviors, support and resources, things about the class and teacher? Beyond grades, felt like you learned or understood a concept taught in your class?
2. What has been the biggest challenge in learning math at SMC so far?
3. What can SMC do, the faculty, the department, the school do to support students successfully complete their math classes?
4. If there was one thing you would want to tell your instructors about students like you, what would it be? Focus on things the school can control.

# Appendix B: Demographic of Study Participants

The following charts and table describe the racial/ethnic, gender, and age group makeup of the 24 focus group and interview participants.

## Participants' Race/Ethnicity



## Participants' Gender

Gender	Percentage
Female	71%
Male	29%
Total	100%

## Participants' Age

Age	Percentage
19 or younger	42%
20 to 24	42%
25 or older	17%
Total	100%