

## CATS for Math Engagement

Title: Bueller, Bueller? Engaging Students in a Virtual World

As summarized in the abstract, math faculty will continue to instruct in a Live Online environment for subsequent semesters and implementing active engagement strategies will be crucial to creating a sense of belonging where students want to succeed and persist. Additionally, data from the 2017 CCSSE survey suggests EMCC performs above the national average in Active and Collaborative Learning – it is important to maintain this high level of performance in our virtual environments despite the challenges of this unprecedented time of Covid-19.

According to the Community College Survey for Student Engagement (CCSSE) website, “Today, community colleges are being asked to rise to new challenges. Across the country, community colleges must respond to the increasing expectations for quality, performance, and accountability set by governing boards, state and federal governments, accrediting organizations, and the public. Key among those expectations is that colleges should emphasize assessment and improvement of student retention and student learning.” EMCC participates in CCSSE survey, a benchmarking instrument, and uses the information to determine areas of improvement, especially with student engagement. See the following screen shot from the Fall 2017 CCSSE results found on the OPIE website:

Figure 3 displays the aggregated frequencies for the items on which the college performed most favorably relative to the 2017 CCSSE Cohort. For instance, 53.6% of Estrella Mountain Community College students, compared with 34.3% of other students in the cohort, responded *often* or *very often* on item 4b. It is important to note that some colleges’ highest mean scores might be lower than the cohort mean.

Figure 3

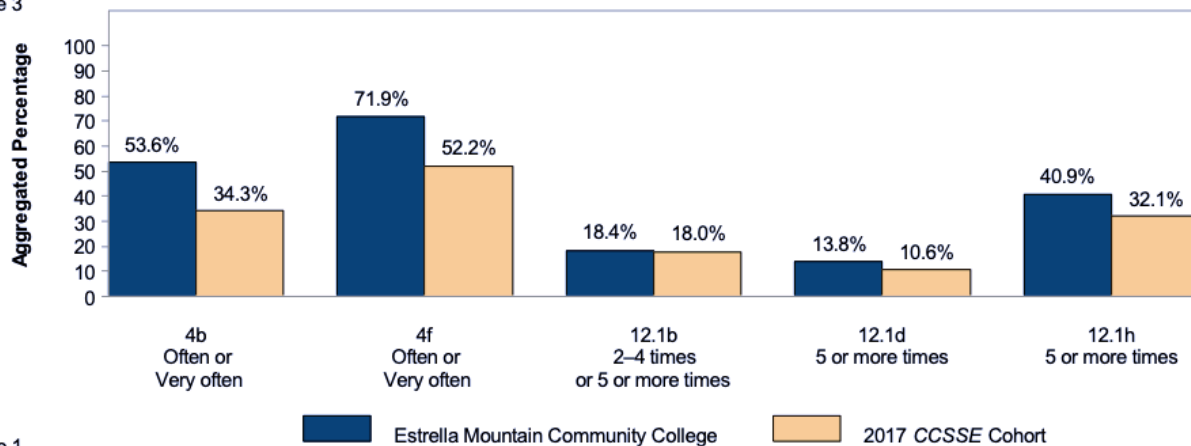


Table 1

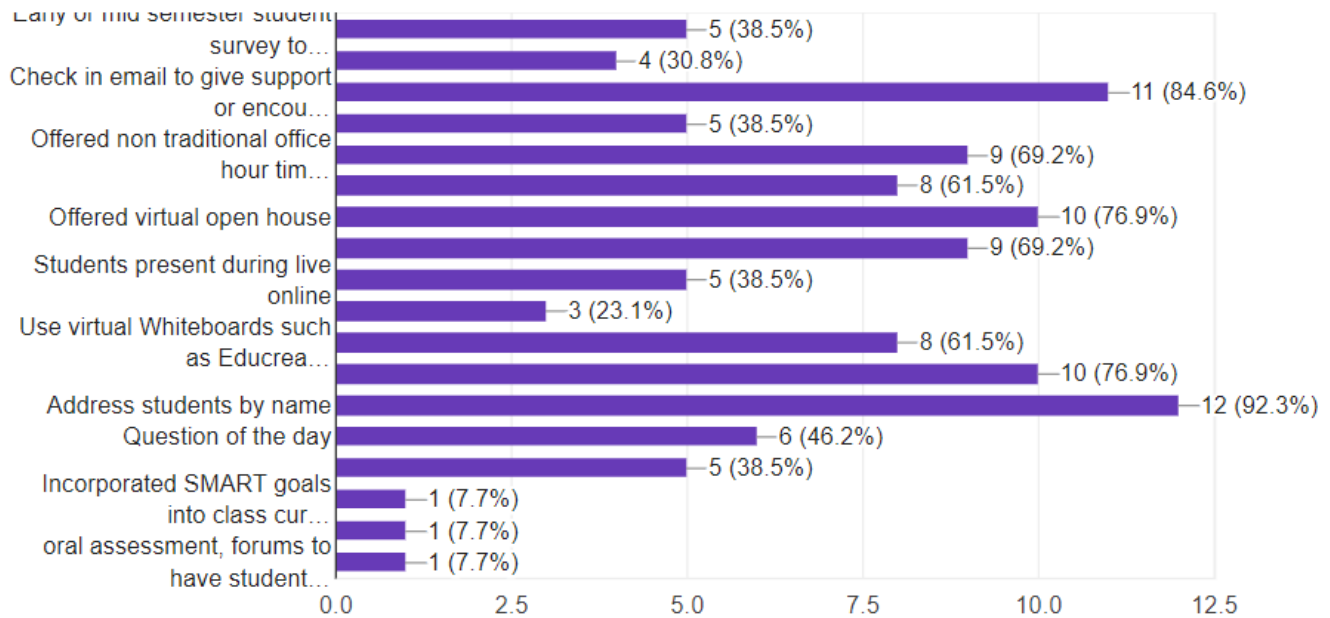
Benchmark	Item Number	Item
Active and Collaborative Learning	4b	Made a class presentation
Active and Collaborative Learning	4f	Worked with other students on projects during class
Support For Learners	12.1b	Career counseling
Student Effort	12.1d	Peer or other tutoring
Student Effort	12.1h	Computer lab

Math faculty strive to keep our performance in Active and Collaborative Learning higher than the national average – even in our virtual environments. In turn, this may help the college strategic plan of increasing graduation rates with equity during this trying time. In the October Math Division meeting, residential faculty responded to an engagement survey developed and administered by Sarah Lockhart. The faculty engagement survey results are illustrated below:

## Engagement Strategies – Faculty Survey

Please check which of the following you have done since March 2020

13 responses



If you answered "other" above, please explain.

4 responses

Just a heads up, I am only teaching asynchronous online.

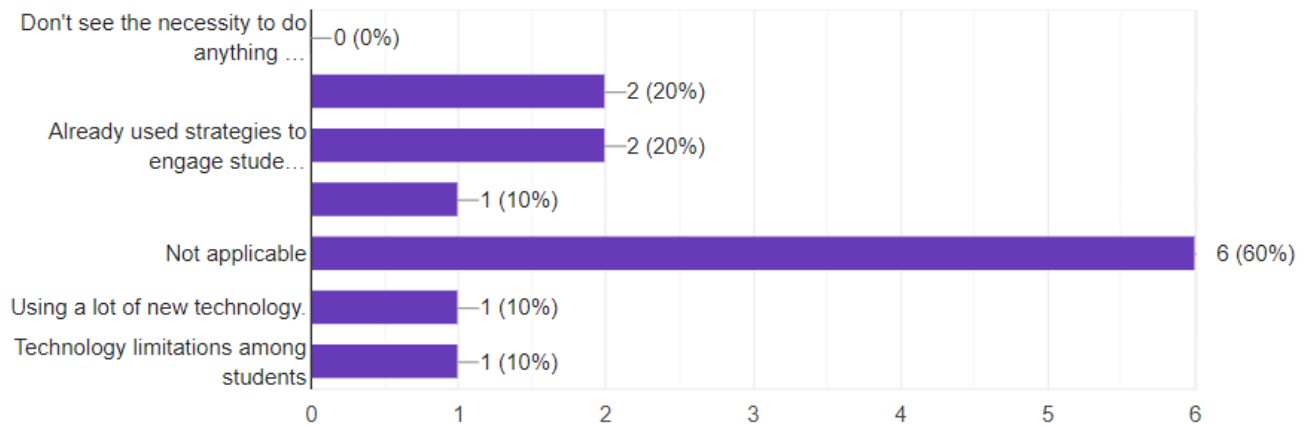
Use my own white board like in classroom

I take time at the beginning of each live online class to check in with my students. I share very openly and honestly how I'm doing (even if it's to share that I'm struggling or having a hard time) and allow students to share how they're doing and other things that are going on in their lives that they want to share. I listen to my students and adjust class content and structure based on their feedback and comments.

forums include sharing errors, writing out thought processes, and responding to journal prompts

## What is preventing you from engaging your students in the virtual environment?

10 responses



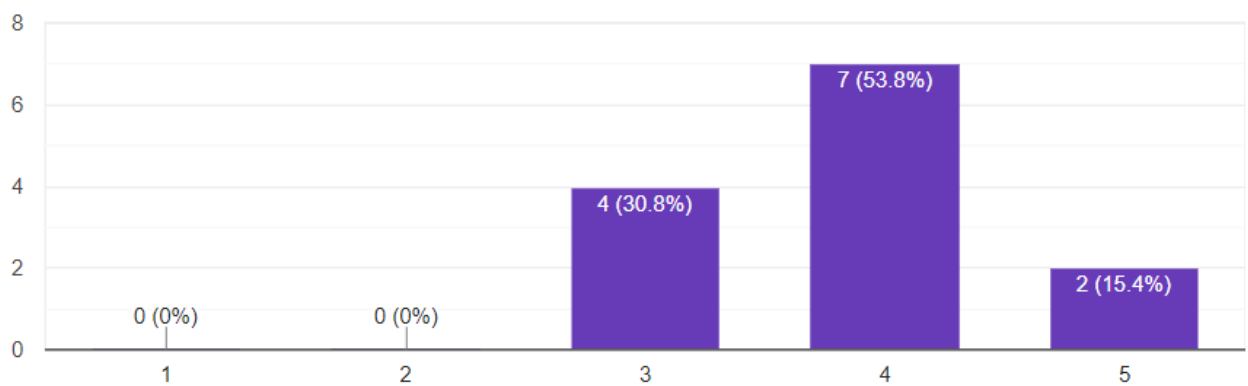
If you answered "other" above, please explain.

1 response

Technology limitations among students

## Do you believe you are engaging students to foster a sense of belonging and/or participation in the classroom?

13 responses



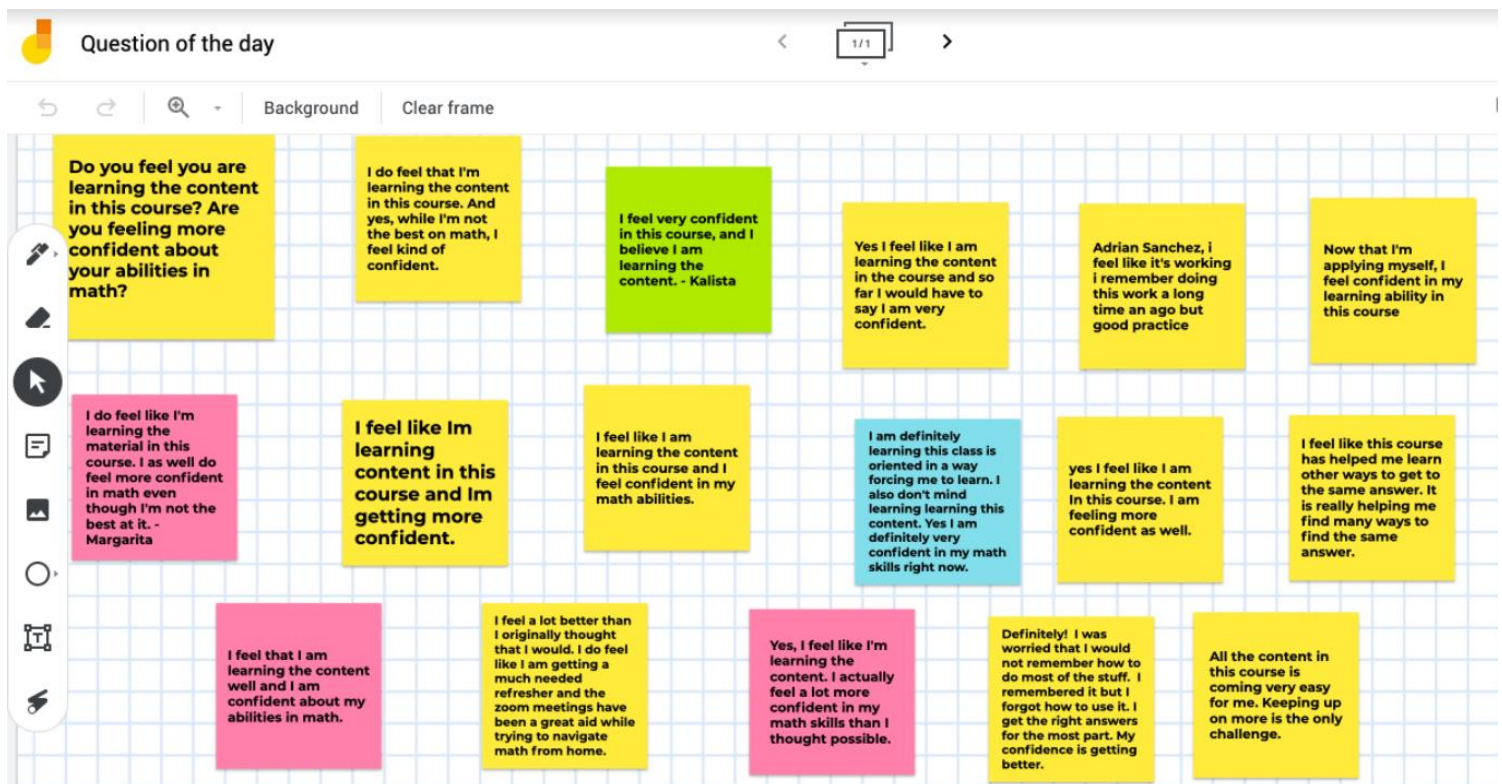
1      2      3      4      5

Not very strong                                    Very strong

As illustrated above, 30.8% of math faculty feel somewhat strongly about their efforts to engage students, while 53.8% of math faculty feel they are strongly engaging students and 15.4% feel very strongly about their efforts to engage students to foster a sense of belonging and/or participation in the classroom.

In addition to the faculty survey on engagement strategies and data from the CCSSE survey, faculty administered student satisfaction surveys or a “Question of the Day” to hear directly from students about their feelings on learning in the Live Online environment. The results from Luvia Rivera’s “Question of the Day” are listed below:

Luvia Rivera’s “Question of the Day”: *Do you feel you are learning the content in this course? Are you feeling more confident about your abilities in math?*



As additional evidence of student satisfaction, three class surveys are illustrated below:

- MAT 151 – Sharon Stefan
- MAT 114 – Bobbi Mohr
- MAT 187 – Rebecca Baranowski

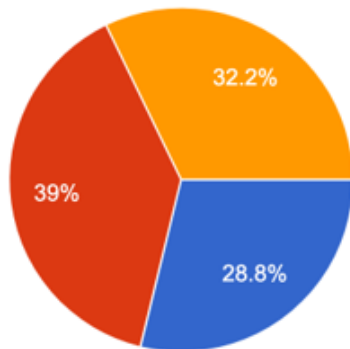
**MAT 151 – Sharon Stefan**

**Class Survey – Week 4**

A short representative sample of Sharon Stefan’s survey is below. The comprehensive survey results and accompanying charts are in the attached files.

### Pick your section

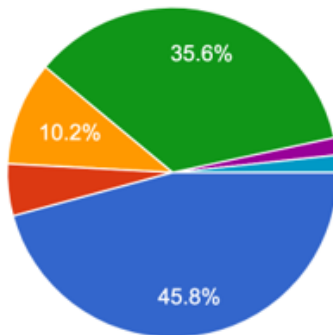
59 responses



- MAT 151 section 23414 meeting @9:20am
- MAT 151 section 23417 meeting @10:40am
- MAT 151 section 23419 meeting @7:00am

### Is this your first year as a college student?

59 responses

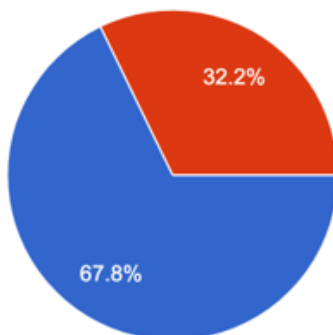


- Yes, I graduated High School this year.
- Yes, I am a Dual Credit student.
- Yes, but I am returning to school after a break from High School.
- No, I have completed some college courses.
- My second semester but first full time, last semester was my first semester b...
- I have been dual enrolled at high school and college for the past three years.

36 are first time college students of some form  
23 have some college classes previously

### Is this class your only Live Online class?

59 responses



- Yes
- No

Pick your section	Is this your first year as a college student?	Is this class your only Live Online class?	Given the format of the class, do you think there is enough interaction between you and your teacher?	Given the format of the class, do you think there is enough interaction between you and your classmates?	How helpful are the breakout rooms, the chat feature, and polls done in class for your learning?	What do you think is going well about class? This includes inside and outside of class.	What do you think could improve about class? This includes inside and outside of class.	Other comments or concerns about class you want to mention... the good, the bad, and the ugly.
MAT 151 section 23414 meeting @9:20am	Yes, I graduated High School this year.	Yes	I think we need a little more time to interact with the teacher.	I think we should be in groups and work together.	It is very helpful.	I like that we are able to be in groups and meet people.	I think we should have partner working and more group work stuff.	I honestly enjoy this class. I like the teacher and the students.
MAT 151 section 23417 meeting @10:40am	Yes, I graduated High School this year.	Yes	Yes	No because of covid	Very	How the professor teaches and explains	Nothing really	No
MAT 151 section 23419 meeting @7:00am	No, I have completed some college courses.	Yes	yes	no	helpful	grades	nothing	I like the professor
MAT 151 section 23417 meeting @10:40am	Yes, I graduated High School this year.	No	Yes	No. But I am content with it.	Not very helpful. We don't talk much.	I think my assignments are going well.	I would like to have better connection with my classmates & get to know them.	No other concerns
MAT 151 section 23417 meeting @10:40am	Yes, I graduated High School this year.	Yes	I would say yes	I would also prefer a little more	They are useful enough, we get to share ideas and answers	I would say the time is going really well, we have the time to actually do things.	The quantity of the questions could go down to 15, I think 20 is too much	Not really, have a nice weekend!
MAT 151 section 23419 meeting @7:00am	Yes, I graduated High School this year.	Yes	Yes	Yes	Not that useful to me	I like the format of the work/ timeline	Nothing	None
MAT 151 section 23417 meeting @10:40am	No, I have completed some college courses.	No	Yes	No because in the break out groups they don't talk very often	Kinda helpful but only when people talk	I am understanding the lessons and it's not too fast!	Making turning on your camera mandatory in break out groups so people can't just sit there and not talk	I love the class! Lol
MAT 151 section 23417 meeting @10:40am	Yes, I graduated High School this year.	Yes	Yes	Yes	Somewhat	Good explanations	Nothing	No
MAT 151 section 23414 meeting @9:20am	Yes, but I am returning to school after a break from High School.	No	Yes	no,sometimes we don't interact at all but it is OK if they at least do their work.	they are pretty useful for communicating with the teacher.	that we are able to learn, and able to reflect about the class in real life issues.	for now im not sure.	they been really good.
MAT 151 section 23419 meeting @7:00am	Yes, I graduated High School this year.	No	Yes, I do think this is enough interaction for me to understand the criteria. The professor has done a very good job at explaining each problem; even if another student needs to hear it differently she will go over it another way.	Not very much interaction with the students just because this is an online class and we have very limited time.	The breakout rooms help me somewhat but the polls do help me.	I think I understand the content of the class and I am able to learn throughly through the videos in MOER and through the Zoom class.	I think posting pictures of the lessons onto educreations would be very helpful. It would help me listen better knowing that I have something to refer back to if I miss any notes.	I like the class that I am in. I know the professor tries her very best which I really appreciate. Since the online is new I totally understand the difficulties of technology. Nothing bad seen from my end. :)
MAT 151 section 23414 meeting @9:20am	No, I have completed some college courses.	Yes	Yes, she has tutoring sessions if we ever need extra help as well	No, they never talk during breakout rooms	Not much because it's hard to learn when everyone's confused	The lectures, the fact that we can still see her notes is very helpful	Probably, once again, the breakout rooms, no one talks, this needs to be fixed 😞	People need to talk more in breakout rooms, it's really hard to actually get peers help on problems when no one talks or discusses.

## Class Survey – Week 8

Thursday, October 8, 2020

### Class Survey Week 8

#### Questions on Survey

- Check all that apply that you feel have been useful in your learning
  - Attending Zoom Class
  - Watching videos on MOER
  - Watching videos on Educreations
  - Doing homework and being able to do a problem multiple times
  - Doing the extra credit
  - Texting my teacher when I need help
  - Emailing my teacher when I need help
  - Going to tutoring hours with my teacher
  - Going to tutoring at ASC or use BrainFuse
  - Participating in virtual study group before Exam 1
  - Poll and chat feature in Zoom
  - Other
- How often do you attend class?
  - Not since first week of class
  - I can count the number of times on both hands
  - Missed less than half the meetings



- Most of the time, only missed about 2-3 classes
  - Never missed class
  - Other
- Give the reasons why you had to miss class, if you had to miss
- Do you think there is enough interaction between you and your teacher? Explain why.
- Do you find class update emails/texts useful?
- 1 not useful at all, to 5 extremely useful
- Do you have a sense of belonging and/or are a participant in the classroom? Explain why.
- How helpful have the Educreations videos been (if you watch them)?
- What do you think is going well about class? This includes inside and outside of class.
- What do you think could improve about class? This includes inside and outside of class.
- Other comments or concerns about class you want to mention... the good, the bad, and the ugly.

Pick your section	Check all that apply that you feel have been useful in your learning.	How often do you attend class?	Give the reasons why you had to miss class, if you had to miss.	Do you think there is enough interaction between you and your teacher? Explain why.	Do you find class update emails and/or texts useful?	Do you have a sense of belonging and/or are a participant in the classroom? Explain why.	How helpful have the Educreations videos been (if you watch them)?	What do you think is going well about class? This includes inside and outside of class.	What do you think could improve about class? This includes inside and outside of class.	Other comments or concerns about class you want to mention... the good, the bad, and the ugly.
MAT 151 section 23417 meeting @10:40am	Attending Zoom class.Watching videos on Educreations;Doing homework, and being able to do a problem multiple times;Emailing my teacher when I need help;Poll and Chat feature in Zoom	Never missed class	N/A	Yes, she asks questions a lot and forced us to give answers	5	Yes, when the professor calls us out by name when we give an answer it makes me feel like I'm actually in class	Very!!!!!!	Everything as a whole is going really well	Going over everything in a little more detail and writing out/showing all work so I don't get confused on where numbers come from	Hope you have a nice day! No concerns from me :)
MAT 151 section 23414 meeting @9:20am	Attending Zoom class.Watching videos on MOER	Never missed class	N/a	Yes	5	Yes, is cool to focus on something interesting	Very	Access to material	Being in a classroom	I have 4 kids and sometimes they all want something at the same time
MAT 151 section 23419 meeting @7:00am	Attending Zoom class.Watching videos on MOER;Watching videos on Educreations;Doing homework, and being able to do a problem multiple times;Doing the extra credit;Emailing my teacher when I need help	Never missed class	I did come late once because of traffic, but that is all.	Yes! The zoom calls are perfect for teaching especially when you have a teacher that genuinely wants to be there to help which has been the case so far.	5	Yes, because I participate and try to ask questions. We make jokes during class as well which is always fun.	They are very helpful because MOER can be picky about the way you insert answers so it is nice to see the correct way. Also, I like having a teacher explain the problems so I can understand them better.	My grade in this class is really great so far and I don't see it drastically going down anytime soon.	I can't think of anything at the moment since everything is going very smoothly.	Great job teaching this class in such a difficult time.
MAT 151 section 23419 meeting @7:00am	Attending Zoom class.Watching videos on MOER;Watching videos on Educreations;Doing homework, and being able to do a problem multiple times;Doing the extra credit;Texting my teacher when I need help;Emailing my teacher when I need help;Going to tutoring hours with my teacher;Poll and Chat feature in Zoom	Never missed class	I have not had to miss.	Yes	5	Yes	Very helpful	I am able to take notes without confusion. I am able to ask questions when confused.	The amount of homework piles up sometimes.	No other comments or concerns

**ASC Study Session** – Sharon Stefan also administered a student satisfaction survey on feedback for an informal study group before Exam 1 with a tutor from the ASC--- she sent a copy of responses to Alexander Garcia and plans to have another study session for Exam 2 and final. For next semester, the instructor will consider a routine, independent bi-monthly study group, if there is an exam or not.

How did you like the format of the study session?	Did you find the tutor to be helpful and explain well?	Would you ask for this specific tutor if you made an appointment with the tutoring center?	Would you attend another study group to prepare for upcoming exams?	Any feedback or additional comments? Possible suggestions for improvement?
I enjoyed that they used kahoot	Yes, he was able to explain the problem and allowed us to ask questions.	Proably.		5 everything was ok.
I really liked the Kahoot idea! It helped the tutor see who needed help without having to ask them directly. Also, the tutor was very willing to answer questions after they explained things which was great.	They were very helpful. I feel that the tutor explained things fairly well.	Yes! This tutor was very nice, and willing to help. They also explained things in different ways, which I really appreciated.		5 Sometimes I had a hard time reading the screen. Perhaps the tutor could write in different colors next time? I feel that it would help me differentiate between some of the equations they wrote. Other than this, they were great!
It went a little too quickly, I didn't feel like I learned much	Yes but it wasn't as clear as Ms. Stefan	No		3 I really enjoy Ms. Stefans class, she helps learn a lot more than I have ever learned in high school or other math classes.
I didn't like how it was on webex, zoom would of been a lot better.	yes	sure		5 next time it would be easier for everyone if it was on zoom
I liked it a lot	Yes I did	Yes I would		5 Really enjoyed the session
It was okay.	Yes he did explain well how to do the problems.	N/A		4 N/A

### MAT 151 – Sharon Stefan Summary

I am learning every day what I can try out, what is working and not working. I am also curious to see who is sitting in the classroom as far as their background. I have been teaching this class through Zoom. I have been using the Breakout rooms to have them work in groups of 4-5 students. I use the polling feature as a warmup for what was done last class. I use the chat feature for students to type in their responses to questions or calculations. I tell them not to hit enter until I make a countdown for them to all submit at once. I also use chat for answering questions if they post them or when they ask me to not move on until they have all the notes I wrote on whiteboard.

Some interesting antidotes are:

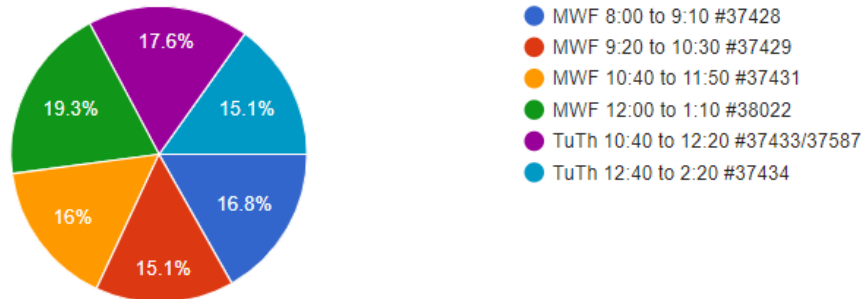
- The recent high school students are struggling with not having peers or myself for personal. immediate interactions. When I have spoken to some of them about how things are going during my tutoring times, they mentioned how they are used to going up to the teacher during and after class to ask questions. What I have done to address this is to include in all my emails and texts to them, is that I am here for them and they need to learn to be an advocate for their education.
- Most have said that even though this is not a face to face class, the fact that they can ask in the moment makes a difference.
- One student mentioned they are more likely to ask a question in this environment because I am not calling on people but asking to share their thoughts in chat or out loud. They do not feel as pressured or embarrassed.



A short representative sample of Bobbi Mohr's survey is below. The comprehensive survey results are in the attached files.

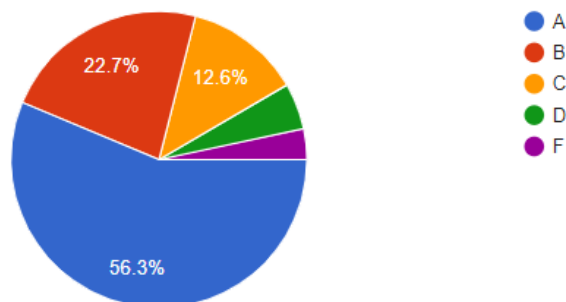
Pick your class...

119 responses



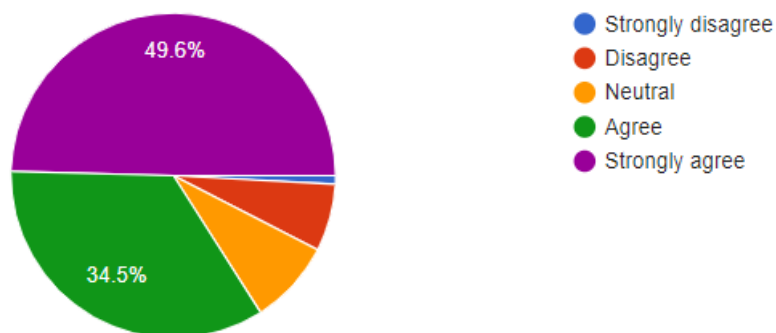
My current MOER grade is...

119 responses



I am happy with my performance in MAT 114 thus far.

119 responses



If you are unhappy with your performance, what factors are inhibiting you from performing at your best? What actions will you put in place for the remainder of the semester to improve?

49 responses

I sometimes forget to look at the calendar on moer and will miss something so I will look on there more often to see if I missed one on accident.

go to tutoring when i have a bad grade and get the help

im fine with my performance

Time management skills

Time management and paying attention to detail. I lost 20 points on my unit 3 exam by overlooking a 20 point question which affected my grade by almost 10 percent

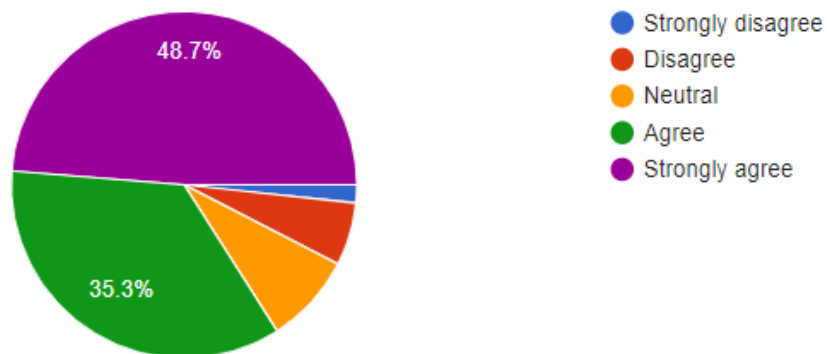
The content...I will use tutoring to help me elevate my grade.

I will countinue to go to math tutoring every office hour.

I'm doing really great and I have found this class helpful.

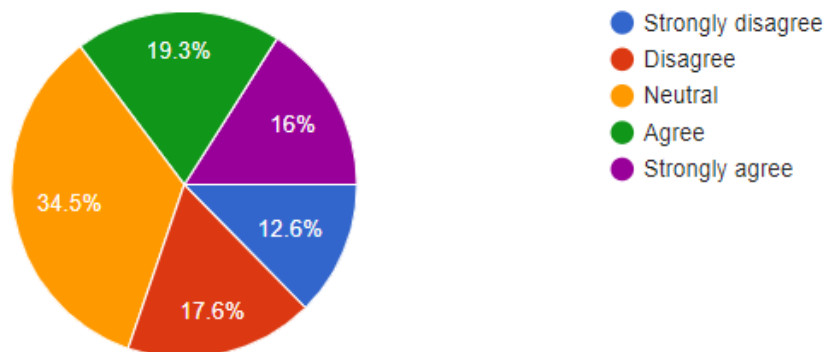
I am happy with the Live Online structure.

119 responses



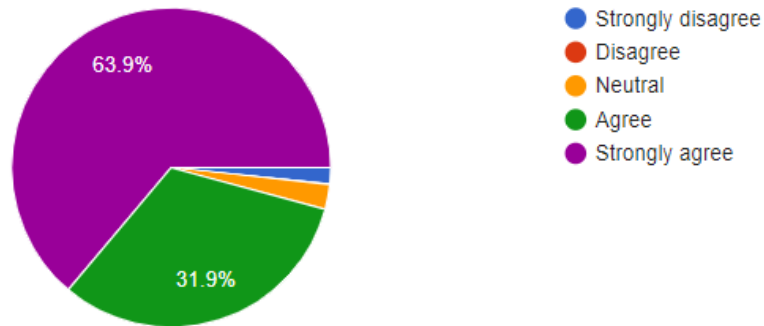
I prefer Live Online over traditional, face-to-face (on campus) instruction.

119 responses



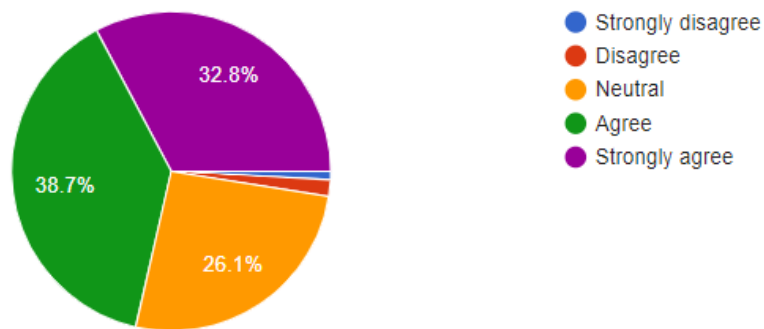
I am happy with the interactions with my Live Online instructor.

119 responses



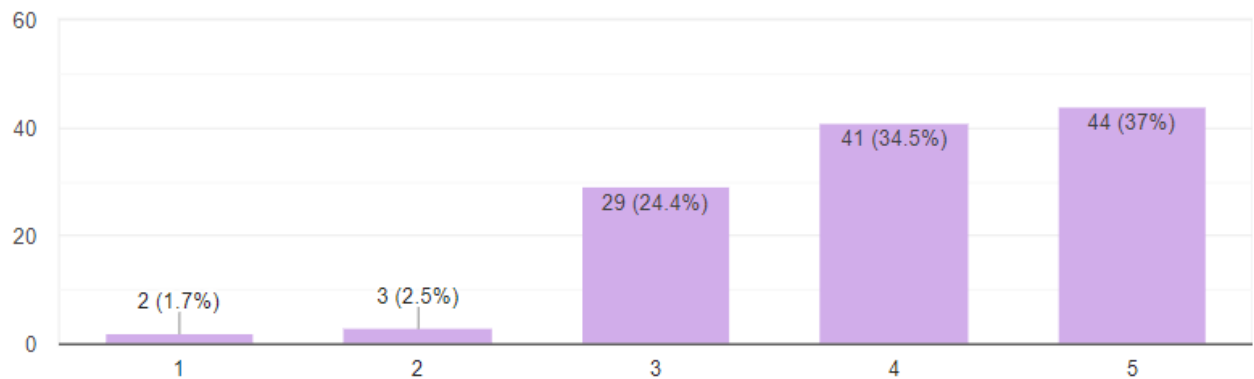
I am happy with the interactions with my fellow peers.

119 responses



I find the breakout rooms, chat feature, polls and virtual activities helpful for my learning.

119 responses



In your opinion, what is going well about the class?

119 responses

The way that professor Mohr works with us and actually explains problems really helps with my learning.

It's more organized and seems and feels to go quicker and easier to learn.

The teacher communicates extremely well.

The work ethic that we all have as a class when it comes to working in online sessions.

Our teacher is always asking if we need help and is always welcomed to assist us.

The way my teacher is teaching and how organize the works are on moer.

the structure of the class and the lesson plans

how much help there is to make the best out of your performance.

Ms mohr is very good at explaining everything and makes class easy to learn .

---

In your opinion, what could be improved about the class?

119 responses

Be in person because that's what I paid for

nothing im happy

Not much it is perfect

Nothing really it's a good class i just wish it was on campus.

Wifi is the only problem sometimes.

There is nothing there to improve

Nothing could improved about this class because it's already good.

i like class how it is

### **MAT 114 – Bobbi Mohr Summary**

In summary, 84% of students report they are happy with the Live Online structure. Interestingly, 35.3% of students report they prefer Live Online to face to face instruction, and 95.9% of students report they find the breakout rooms, chat feature, polls, and virtual activities helpful for their learning. The data also suggests an area of improvement to be interaction with peers – instructor has made a conscience effort to incorporate more opportunities for peer-to-peer interaction after reflecting on the information shared by students through the satisfaction survey.

## MAT 187 – Rebecca Baranowski

A short representative sample of Rebecca Baranowski's survey is below. The comprehensive survey results are in the attached files.

Given the format of the class, is there enough interaction between the instructor and fellow classmates? Please explain.
Yes. We have time in lessons where she teaches the material, but also time for us students to work together in groups.
yes we have breakout rooms every class
Yes
a little since some do not even show their face and i interact better when it is face to face, that is just me. ALso some people just explain without sharing their screen and it can sometimes be difficult to learn
Yes, teacher is highly engaged with students and has students interact with eachother
Yes there is enough; since its actually live it helps us still talk with the teachers. But I prefer going to class.
There is an excellent amount because the student will be engaged as long as they pay attention.
For my MAT187 class, there is plenty of interaction. I really appreciate the office hour blocked out time!
Somewhat yes, but no because online takes up some time.
Yes! There is a perfect amount of interaction between me and other students.
Yes i like the way the class is ran, the group sessions are great for getting another way of understanding the material by having yourself or a classmate explain it and the main class session already run smoo
yes, this teacher engages the studeents but most of my other teachers do not
Yes, I believe there is. To be quite honest it has to do with the students in the class. For example our class is very interactive so everyone is pretty much on the same level. I believe that you have structured th
The interaction is very balanced and engaging, I don't feel lost or overwhelmed. Mrs. Baranowski is very good at keeping a good pace while making sure everyone is understanding the material.
yes and the professors I have now for live online is making it easy and accessible to access in class information but online science classes SHOULD be IN PERSON!
Yes there is enough explanation and discussion about the course and problems.
Yes, because we are constantly being added to breakout rooms and are asked to discuss answers.
Yes, I often interact with the teacher and with my fellow students in breakout rooms.
I think there is. She offers consistent office hours and has encouraged us constantly to communicate with her. In class, we're always given a chance to speak up and ask questions and we can always email

How helpful are the breakout rooms, chat and whiteboard features for our class?
The breakout rooms are somewhat affective depending on the group you're put in. I don't really like that the groups are randomized.
very helpful
10/10
they are somewhat helpful since some do not even share their screen, but they do help me
Very useful
Breakout rooms are kind of helpful as sometimes you get students who do not talk so it depends.
Breakout rooms are great because it allows a small group to discuss meaning some students who have anxiety won't have a tuff time.
They are generally helpful but I tend to do better when I work on my own or with the teachers explanation.
they are very helpful because the kids help out a lot by telling their point of view and explaining it.
The MOST helpfull! Talking with other students and sharing screens makes a big difference.
KEEP THE BREAKOUT ROOMS DEFINITELY it not only helps et to know classmates more but the encourages study groups that are a must of some, the chat is nice for those who do not have mics, and the useful
The chat and whiteboard feature and very beneficial for the class because we always use them every class period. However the break out rooms can be a hit or miss. It just depends on the people you end up
They are very helpful once we got the hang of how to utilize them. It helps give a visual explanation in real time to help other classmates understand.
Super helpfull
I think I learn the best practicing and discussing with others.
I believe that the whiteboard is a lot more helpful that the breakout rooms themselves.
I honestly am not too fond of breakout rooms. A lot of the times its silent and very awkward. I'd like it better if we got more time with the professor as a whole class than have classes where I'm in a silent group
I feel that the breakout rooms are really helpful, although the whiteboard feature seems more of a hassle than anything. Because not many are able to draw on the whiteboard with, say, a pen, it's pretty restri

### MAT 187 – Rebecca Baranowski Summary

In summary, students report there is excellent interaction with instructor and peers in the Live Online environment. The use of breakout rooms and small group interactions help students feel successful. Students also report the use of the chat and whiteboard features to be beneficial for their learning, as well.

The engagement strategies employed by the instructors in this report have received shining reviews from the students using them in the Live Online environment. Students report the engagement strategies are helping them feel successful – the necessary component to increase student achievement and persistence.