

# How do students perceive their connections in different class modalities (online vs in - person)?

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Mentors: Emily Mehlman, Elizabeth DiCesare, Dawn Carter

## Introduction

Personal connections between peers, teachers, and learning assistants (LAs) are essential to making students feel welcome and motivated in the classroom. With the recent changes due to the global pandemic, many classes here at RIT, have adapted the online format in order to prevent the spread of the virus. Personally, we have seen the range of negative impacts of having class online, lack of motivation, technology issues leading to confusing lectures, headaches from screen time, etc. As a result, a survey was used to assess how online classes have changed students' connections and how they perceived their connections to peers, teachers, and LAs within their classes. As well as how these changes made them feel. Generally the students feel more connected to each other than instructors and feel more connected in the lab (in person) than lecture (online). Their overall social networks were either unaffected or negatively affected by remote learning.

## Methods

A google survey was distributed to the students in Introductory Biology II (N = 148) for two and a half weeks.

Survey contained ranking, short answer, and multiple choice questions. The modality was narrowed down by asking if students were online, in person, or flex.

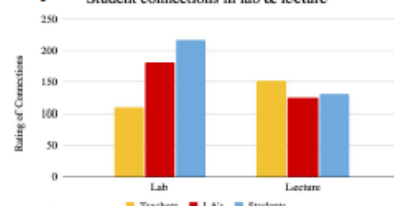
An analysis of the overall connectedness the students felt was compared between online vs in person.

Graphs of the data were uploaded from the survey results.

## Conclusions / Future Research

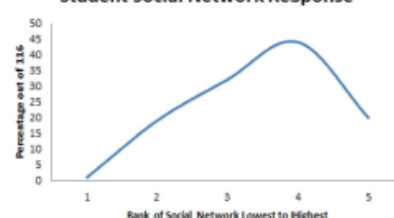
- Overall LAs play a key role in helping students by being a liaison between their peers and mentors. There is a greater connection in lab compared to lecture which is likely due to increased interaction and group work, as well as smaller class sizes. Students benefit from having smaller class sizes in online modalities for LA connections.
- Future research could be looking more at how the size of the classrooms influences the dynamics of the class such as the willingness to ask questions, how access to a computer limits the number of connections individuals can make, impacts due to course difficulty, comparing personal connections for online classes pre-COVID to now, and a post semester quiz on rating their social network to determine how much the semester impacted it.

Graph 1. Student connections in lab & lecture



Graph 2.

Student Social Network Response



## Results/Analysis

**Graph 1.** "How connected do you feel to your peers, instructors, and LAs in Lab and Lecture?" Summarized graph of rankings for the above question. Possible rankings were "very well", "somewhat", "pretty well", and "not at all". Each ranking was assigned a numeric value and added together for each respective response. Students feel more connected to other students and LAs in lab compared to lecture where students feel more connected to the teacher. N = 116

**Graph 2.** A gradient of students' social networks coming into college, 54% of students rate their social network as 4 or higher, 46% have ratings of 3 or below, N = 116. The majority of students have a high ranking for their social network while a little less than half have a moderate to low ranking for their social network. It is assumed that the students came into the semester with some kind of network.

**Graph 3.** Breakdown of student connections for lecture in the Regular intro Bio 2 section. In the diagram, 64.5% of the students said they felt like they had some connection with their LA for lecture. N = 79

**Graph 4.** Breakdown of student connections for lecture in the AP Scholars intro Bio 2 section. In the diagram, 81.6% of the students said they felt like they had some connection with their LA for lecture. N = 39

Rank how connected you feel to your LA in lecture

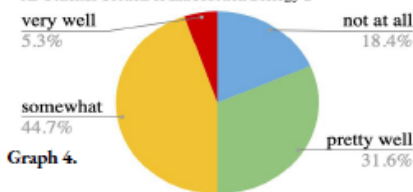
Regular Section of Introduction Biology 2



Graph 3.

Rank how connected you feel to your LA in lecture

AP Scholars Section of Introduction Biology 2



Graph 4.

## Discussion

- Based on the ratings of their social network, we can infer that most students have come into the semester with some kind of social network and online learning either did not change that network or affected it negatively.
- Students tend to reach out to other students more than teachers and LAs and do not tend to seek out help outside of class with instructors. Teacher connections with students are highest in lecture because this is the person who is facilitating the class. Students seem to connect most with each other and LA's in a lab setting where they are in-person.
- Smaller class sizes seem to increase how connected students feel to their LA's, in lecture the smaller class size had a 17.1% higher percentage compared to the larger section in the number of students who felt that they had some level of connection to their LA.
- The online factor seems to reduce LA's effectiveness compared to a in person lab. With more online classes this connection seems to be lost for some students.
- With a decrease in the social network and lack of connectedness to be able to reach out for help, students are not set up for success in this framework.

# The Effects of Socially Distanced and Online Classes on Personal Connections made in RIT Physics Classes

Teammates: A. Bogovik, A. Lasko, A. Martsen, A. Von Plinsky, J. Was

Mentors: Dr. Ciccarella, Dr. Ferrante, Dr. Kartaltepe, Dr. Chabot, Dr. Trayling

## Introduction

The switch from traditional in-person classes to online or socially distanced classes has caused a lot of changes. One common sentiment is that forming personal connections in classes has become harder. While this is commonly thought, there was not any data to actually prove or disprove this hypothesis. Our study was designed to determine if students in Physics classes at Rochester Institute of Technology during the Fall of 2020 felt the class modalities affected their abilities to connect with the professor, Learning Assistant, and other classmates. Moreover, we tried to assess how the connections were affected and whether the results agreed with the hypothesis.

## Materials & Methods

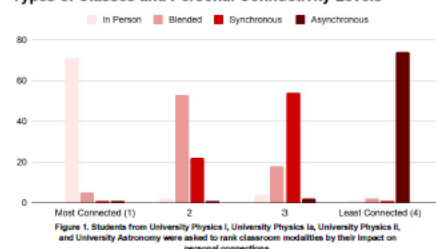
- 1 **Creation of Survey**
- 2 **Feedback from Non-Participants**
- 3 **Creation of Final Draft of Survey**  
Edited based on non-participants' feedback.
- 4 **Distribution of Survey**  
Sent out to 5 different RIT physics classes, with 90 student responses. Incentives included designating class time for survey, offering extra credit if 75% of the class filled out the survey, and having it as a mandatory assignment.
- 5 **Interviews Conducted**  
Interviews were optional.
- 6 **Analysis of Data**  
Data was analyzed individually and, surveys and classes were combined and contrasted.

## Acknowledgements

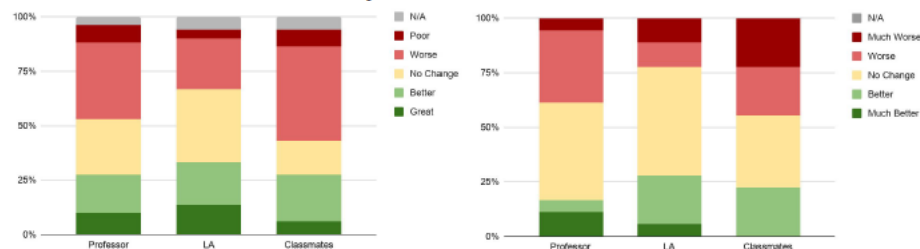
Thank you to: Dr. Emily Mehlman and Erika Doroshenko, and our mentors Dr. Jeyhan Kartaltepe, Dr. Andrew Ferrante, Dr. Michelle Chabot, Dr. Gregory Trayling, and Dr. Steven Ciccarella

## Results

Types of Classes and Personal Connectivity Levels



How would you rate the quality of your relationships in this class, compared to previous years / other classes?



## Discussion

-The student-LA relationship was the only one with a positive trend, though it was slight. We think this is because LAs are interacting more with students during classes, due to chat features in use.  
-Lecture classes may have less change because the lectures have less interaction in general, so the difference is not felt as much.  
-The word cloud and quotes emphasize that much of the connection occurs outside of a "work" setting, which is greatly inhibited with online modalities.

Figure 2. What especially makes students feel connected?



"I really only connect with my classmates for work. There's no walk-home talks like there used to be."

"I tend to talk more and ask questions in class or talk to people before or after lecture time, but nowadays it feels like I really just show up to the zoom on time and then leave once the class ends."

"...being online somehow adds to my personal discomfort"

"...I assume no one on zoom will even recognize me in person, so I've never said hello."

## Conclusions

As was expected it is harder to form personal connections, as online learning hinders the small ways we make connections. Further studies could investigate methods to facilitate non-work conversations, and what can be done to bring that to an online class.

# Does online learning affect information retention?

LAs: Emily Mahoney, Dominick Velez, Jessica McNeely, Peter Wengert

Mentors: Dr. Paul Craig, Prof. Steven Ciccarelli, Dr. Matthew Coppenbarger, Dr. Premlata Kumar

## Introduction:

As online learning becomes more prevalent throughout the world due to the pandemic, many questions about its effectiveness need to be addressed. We have noticed a pervasive lack of engagement among our fellow students of late, and it is of interest to us to see whether the surge in online classes may have contributed. To this end, we have decided to see how well information has been retained in the two learning modalities. By sending out surveys and comparing grade data between years, we have found that online learning has not significantly affected information retention.

## Methods:

### Survey Data:

1. Collect data from students through a 10 -12 question survey.
2. Analyze data individually.
3. Combine data and make graphical representations.

4 separate surveys were sent with similar questions, 145 students were surveyed in four different classes

### Grade Data:

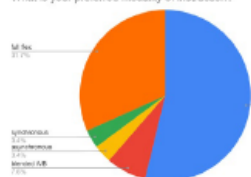
1. Obtain test score averages from a past semester.
2. Obtain test score averages from current semester.
3. Compare in graphical representation.

Data was taken from two different classes, each offered this semester as well as during a previous semester.

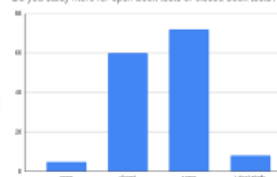
Class	Reponses	Exam Scores Taken?
General Chemistry for Engineers	18	No
Game Theory	19	Yes
DC Circuits	44	Yes
Cellular and Molecular Biology for Engineers	64	No

## Results:

What is your preferred modality of instruction?



Do you study more for open book tests or closed book tests?



Which of these study tools, if any, do you use to prepare for an open book test?



Do you find yourself more focused when online or in person?



### How do you feel about online learning?

Generally students prefer in person; Student and teacher interaction is important to them. That said, some students are able to find positives such as rewatching lectures and having freedom in their learning. *"I feel very disconnected from the professor for blended, mostly because the in-person students have a better connection with the professor."*

### What do you hope next semester will look like?

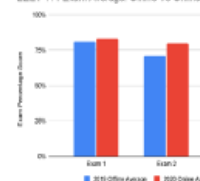
*"I hope that it will be slightly lighter, more recharge days, more in person classes and more activities on campus."*

### Do you believe your information retention would change next semester if all classes were moved back to in-person? If so, how?

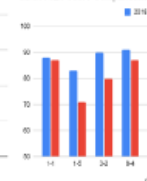
Overwhelming yes; Students feel as though they will be able to produce higher quality work when there is a clear separation between school and home.

*"Yes...The ability to have teacher-student interaction, to be in the classroom setting, and having a set time for class would help me be vastly more engaged. This also would allow me to mentally rest from time to time."*

EEET 111 Exam Average: Offline Vs Online



MATH 321 Score Comparisons



## Discussion:

From our survey data, we found that students preferred in-person classes, followed by full-flex. In-person allowed most students to be more focused on their class and feel connected with the professor. However, full-flex allows students the freedom of a choice between staying home or going to campus.

From our grade data, we found that it was more dependent on class. For EEET 111, test scores between years started off very close, but then the class with an online element had a lower exam 3 score by a wide margin. For MATH 321, the students this semester had lower scores overall for homework and midterm problems.

## Conclusion/Future Directions:

While overall sentiment was mixed with regards to online learning, it was determined that information retention was not significantly affected by the change. In the future, there are a few things we would like to try to expand on this research. First, we would like to get data from a semester when a pandemic isn't impacting the world. This could give us data to compare to in order to see how much of our data was influenced by the pandemic. Secondly, we would like to take data from classes that are outside the STEM field to see if the results are the same. This would help add more variety to our sample pool.



## Let's Talk About Personal Connections

Student: Josephine Bensa. Mentor: Dr. Joseph Lanza fame

### Introduction

The ability to form personal connections is an intrinsic human desire that impacts our mental and emotional wellbeing. Personal connections in a college setting can prompt for more engagement, motivation, feelings of support, academic success, and student accountability. However, the changes brought forth by the pandemic has limited our abilities to form personal connections with each other, and section 2201 of the General and Analytical Chemistry course illustrates these new changes. The course has adopted a hybrid modality that allows students to attend the lecture by joining in person, joining on Zoom, or learn the material asynchronously. As a result of the changes in teaching and learning modality for this class, this study seeks to understand how the classroom structure may influence how students form personal connections with others in the class.

### Methods

A survey consisting of question on class modality, levels of connection and comfort was generated in a collaborative setting with input from the faculty mentor. The survey was created using Google Forms and distributed to all students in the course. Students received a grade for completing the survey.

The survey was sent to 236 students

Multiple reminders were sent out over 2 weeks

206 students returned the survey within 2 weeks

### Results

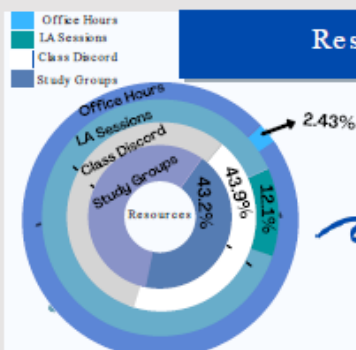


Figure 1: The percentage of students that utilized different resources to support them within the class.

“I don't really know or work with anyone in this class because I attend mostly online. Even when I am in person no one really communicates.”

“If I were more connected using discord as it's a network of all my classmates, I made some friends through there as well.”

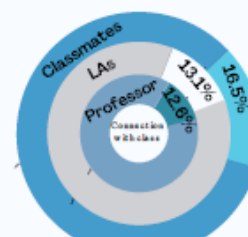
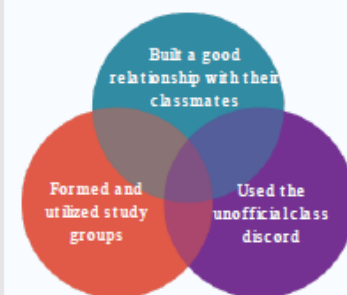


Figure 2: The percentage of students that felt connected to specific components of the class.



“Taking with people you're close with is the easiest way to communicate.”

Figure 3: A Venn diagram that shows the means of forming and maintaining connections within the class.

### Discussion

The results of this study show that majority of students in the class are unable to form meaningful personal connections with their classmates, LA, and professors due to the class structure. In order to promote more personal connections within the class, there needs to be a promotion of collaborative learning, the utilization of student-friendly external resources like Discord, and the implementation of more group-based activities and projects.

### Recommendations

More research on how the use of student-friendly resources like Discord influence student success and personal connections.

More research on how group-based learning and activities impact personal connections.

### References

1. Kaufman, T. (2020, October 22) Building Positive Relationships With Students: What Brain Science Says. Understood.
2. Junko Shimazoe & Howard Aldrich (2010) Group Work Can Be Gratifying: Understanding & Overcoming Resistance to Cooperative Learning, College Teaching, 38(2), 52-57, DOI: 10.1080/87567550903418594

### Acknowledgments

Dr. Lanza fame, Dr. Mehman, students in Gen Chem 1

# Effect of Class Modality on Personal Relationships

By: Andrew Weston Mentor: Professor Anthony Chirico

## Introduction

With the advent of Covid-19 many colleges and universities across the US have transitioned from in person classes to a mix of in person and online classes. This switch raises several questions about how students feel in their classes. More specifically how connected students feel to their professors, peers and Learning Assistants (LA). Research shows that positive interpersonal relationships are critical to the success of students in the classroom no matter the level of education be it K-12 or higher education (Zandvliet ET AL). This raises the question how has the transition to a mix of in person online and hybrid classes impacted the quality of personal relationships students have in and out of the classroom. The remainder of this poster will show the results of a survey given to RIT students of different year levels in Principals of Statics and Mechanical Dynamics with Applications.

## Results

Chart 1: How Respondents Rated the Quality of their relationships?



Chart 2: Which Modality Makes Respondents feel most Connected?

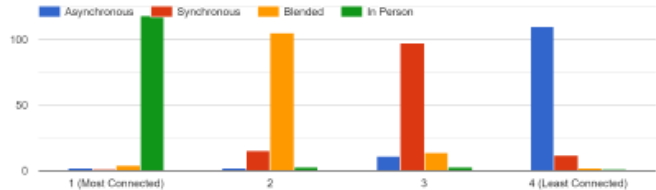


Chart 3: How comfortable are you working in a small group of your peers?

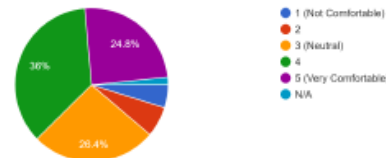
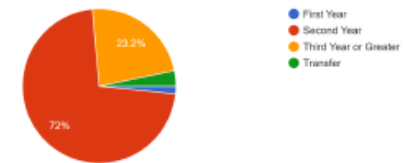


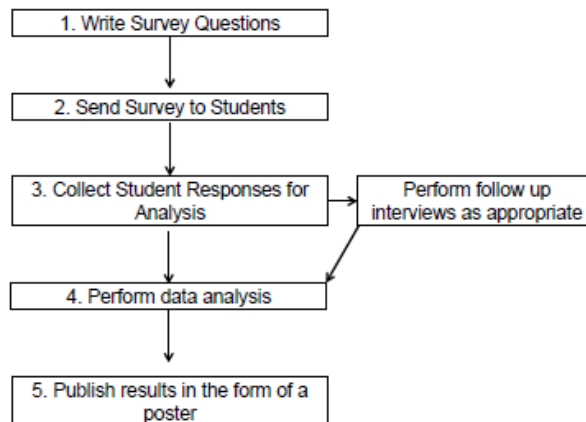
Chart 4: Year level of Respondents



## Conclusions

- In General students in Statics and Dynamics feel their relationships are worse this semester
- In General students in Statics and Dynamics feel more connected when class is held in person
- From interviews students feel as though the change in relationships are from lack of face-to-face contact

## Materials & Methods



The respondents to the survey indicate that most students feel as though the relationships in their classes are worse especially with professors and their peers. When asked how their relationships differ from past years in an interview one student said, "The difference is I don't have any relationships at all.", another student made a similar comment "I haven't been able to meet new people or interact much." Indicating that online/ hybrid classes changed how students in Statics and Dynamics interact when compared to their previous classes. It is worth noting that respondents to the survey indicated that they still feel very comfortable working in small groups of their peers. It is worth noting that due to the small sample size of 125 students these trends should not be applied to all college students.

## References

1. Brok P D, & Mainhard Tim, & Tartwijk J V, & Zandvliet D. Interpersonal Relationships in Education: From Theory to Practice, Advances in Learning Environments Research Vol 5.

## Acknowledgements

Ashley Lasko, Abi Von Plinsky, Anton Bogovik, Ashley Martensen, Benjamin Sander, Haven Chady, Jacob Was, Josephine Bensa, Makayla Reed. Professor Anthony Chirico

# How Has Attending College During The Pandemic Affected Students' Mental Health?

Tori Covell, Timothy Forst, Seth Jones, Liz Knisley, Samara Patterson, Molly Roesch, Joey Testa

Mentors: Marc Ellis Holland, Dr. Elizabeth DiCesare, Dr. Michael Gleghorn, Lisa Prinzi, Kathleen Holcombe, Dr. Alla Bailey, Dr. Andrew Ferrante

## Introduction

COVID-19 has brought many different challenges to everyone's day to day lives. Our way of life has changed drastically this year, from wearing masks in public to going remote at work or school. In March, nearly every single college switched to remote learning in just a couple of days, which affected students in good and also bad ways.

As RIT reopened in the fall to students, it offered a variety of classes with different modes of learning, such as in-person, blended, and online, as well as a more COVID-friendly, and different, campus dynamic. The goal of this project was to determine how college during the pandemic has affected student's mental health and ultimately provide some ways that this can improve in future semesters. Through a class survey and personal interviews, we, as a group, were able to determine what factors are mostly affecting students' mental health this semester and got a better understanding of how students are feeling as we continue through this global pandemic.

## Materials/Methods

Created survey and interview questions

Conduct interviews

Disseminate survey

Analyze qualitative data

Analyze quantitative data

\*176 total student responses to survey

## Results

**Combined Stress of housing, friends and family, social life, and school stress from BEFORE the Pandemic**

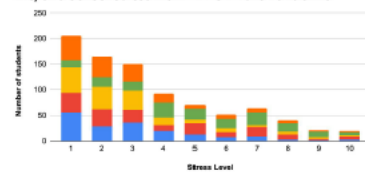


Figure 1. Combined stressors experienced by students before the pandemic. Data came from all classes surveyed. 1 indicates low stress, and 10 indicates high.

**Combined Stress of housing, friends and family, social life, and school stress, from DURING the Pandemic**

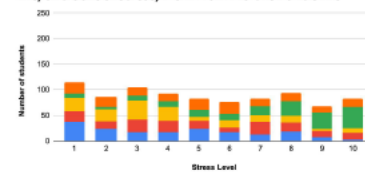


Figure 2. Combined stressors experienced by students during the pandemic. Data came from all classes surveyed. 1 indicates low stress, and 10 indicates high.

**Student Stress from Covid-19**

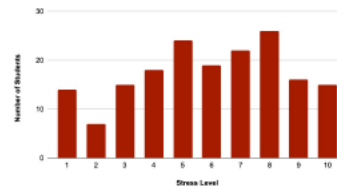


Figure 3. Stress experienced by students because of the COVID-19 pandemic. Data came from all classes surveyed.

**Student School Stress BEFORE the Pandemic**

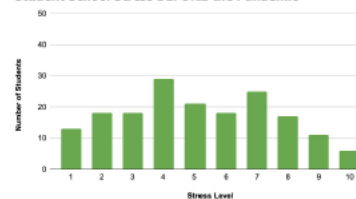


Figure 4. Stress experienced by students from school work before the pandemic. Data came from all courses surveyed.

**Student School Stress DURING the Pandemic**

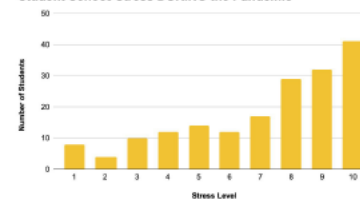


Figure 5. Stress experienced by students from school work during the pandemic. Data came from all courses surveyed.

We found that student stress has generally increased during the pandemic. Figures 1 and 2 show how students combined stress has increased during the pandemic, and Figures 4 and 5 show the area that caused the biggest increase: school work. Figure 3 shows that students are a little less stressed about COVID-19 than they are about their school work.

## Analysis

In the 7 classes surveyed 183 students completed the survey out of 378 possible responses. Through the survey it was found that student stress levels increased in all areas. There was not one area that showed a more significant increase in stress levels, however there was no area that showed a decrease. The largest change in mental health was in academic stress.

This survey was sent to students ranging from performing arts to STEM, and ranging from 1st to 5th years, with all being negatively impacted by the pandemic with worse mental health being reported in all categories.

This survey showed that there was a significant decline in student's mental health due to the COVID-19 pandemic based on student self-reported data.

## Conclusion and Future Action

This study found that COVID-19 impacts multiple areas of student's lives, and has negative impacts on their mental health regarding their stress level surrounding academics. Surveying varying kinds of classes such as wellness courses show that students do value their mental health and attempt to balance their course work with non-academic courses.

-Wellness Classes: Students: Should RIT strive to increase the requirement? Students indicate wellness classes are vital to maintaining good mental health.

-Counseling and Psychological Services: How can RIT ensure their students are fully aware of the mental health services on campus? Directing awareness towards freshman who are struggling to adjust.

-Learning Assistant Role: How can LAs shift their role help students if they express increased stress over the next few semesters due to the pandemic? RIT and the LA program can provide training programs.