

# Exploring the Impact of Remote Learning on Student Engagement and Communication in Science and other Classes

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## INTRODUCTION

Leominster High School

- Population in 2020: 1,888
- Located in central Massachusetts, one hour from Boston.
- Grades 9-12

Students from grades 9-12 participated in this study from various courses: biology, chemistry, as well as anatomy and physiology. A variety of teachers also participated.

### Instructional Context

After finishing the 2019-2020 school year remotely as a result of the COVID-19 pandemic and starting the 2020-2021 school year in the same fashion, the impact of remote learning on student engagement and communication resulted in the development of this project's focus questions.

## FOCUS QUESTIONS

- 1.) How did remote learning impact student engagement?
- 2.) How did remote learning impact student communication?
  - How did remote learning impact student-to-student communication?
  - How did remote learning impact student-to-teacher communication?

## METHODOLOGY

Student engagement and communication were assessed from two perspectives: the student and the teacher. Data was collected through a Likert Survey as well as an Interview from each perspective.

Qualitative data were organized for thematic analysis, looking for similarities and differences in responses first among students, then among teachers; and lastly among students and teachers.

Table 1. The data triangulation matrix displays how each instrument in this action research project was used to explore the focus questions of this study and included a Likert survey and interview from students' and teachers' perspectives.

Research Questions	Instruments			
	Student Likert Survey	Teacher Likert Survey	Student Interview	Teacher Interview
How does remote learning impact...				
student engagement?	✓	✓	✓	✓
student-to-student communication?	✓	✓	✓	✓
student-to-teacher communication?	✓	✓	✓	✓

## DATA ANALYSIS

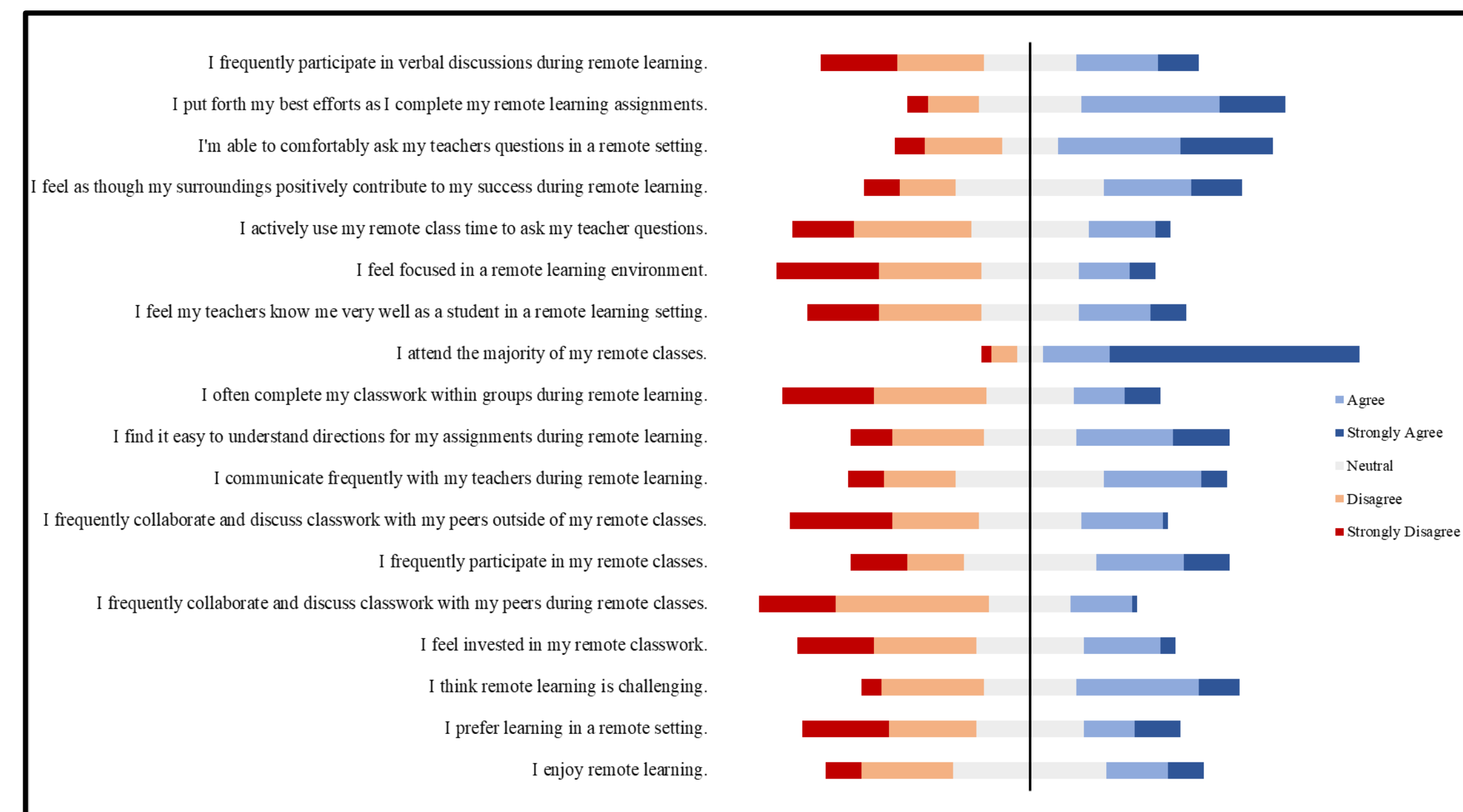


Figure 1. Responses to the Student Likert Survey display the level of agreement among students regarding 18 statements that were used to assess student engagement, student-to-student communication, and student-to-teacher communication (N=74).

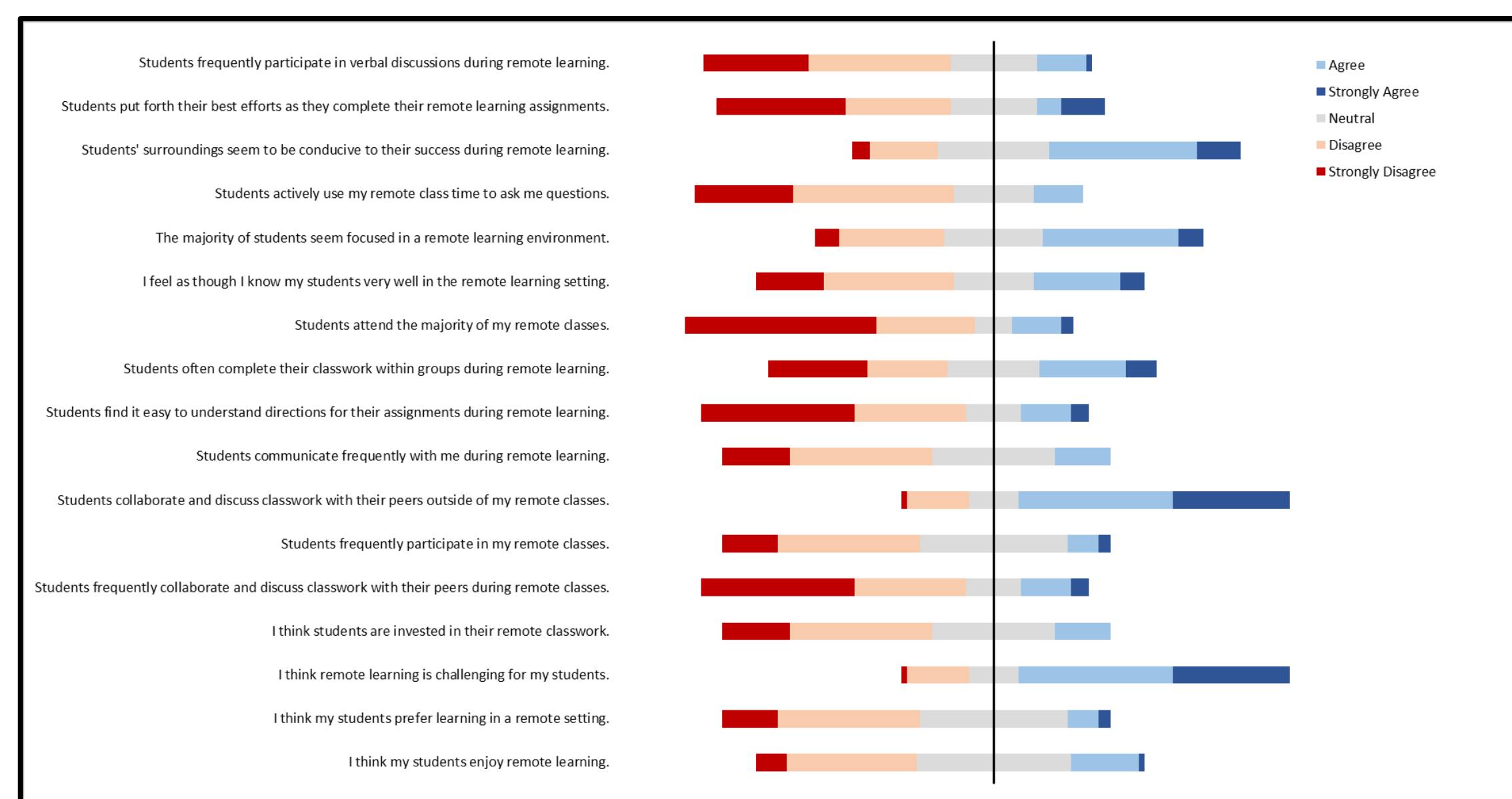


Figure 2. Responses to the Teacher Likert Survey display the level of agreement among teachers regarding 18 statements that were used to assess student engagement, student-to-student communication, and student-to-teacher communication (N=63).

Table 2. Responses from the Likert surveys' open-ended questions as well as from the interviews were analyzed and condensed into themes based upon responses from each perspective regarding students and their experiences with remote learning.

Student Themes				Teacher Themes			
Technology	Social and Academic Interactions	Autonomy	Health	Technology	Student Involvement	Relationships and Support Systems	Evaluating Student Progress and Learning
Remote organization	Fewer opportunities to interact with classmates	More independence	Increased safety	More flexibility	Lack of attendance	Inconsistent expectations	Quality over Quantity
More confidence regarding classwork	Social discomfort on google meet	Lack of focus and time management	Physical comfort and discomfort	Remote organization	Lack of participation	Lack of student-to-student interactions	Less visibility made check-ins difficult
		More flexibility		IT problems	Lack of focus and time management	Lack of student-to-teacher interactions	More plagiarism

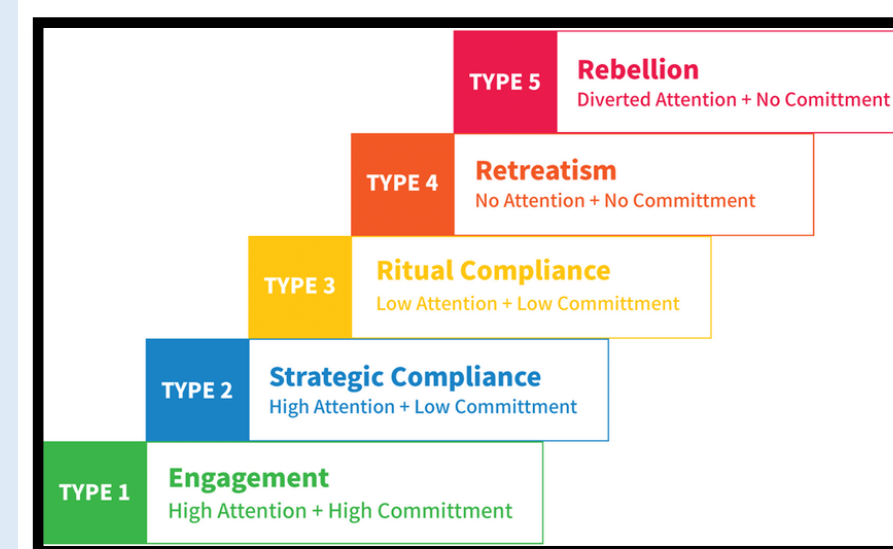


Figure 3. Schlechty's model for the five levels of student engagement communicates that engagement varies as a spectrum, depending on the degree of attention and commitment that students display in their classes.

## CONCLUSION - KEY FINDINGS:

- Students and teachers alike agreed that students lacked focus.
- From both the student and teacher perspectives, student-to-student interactions were limited during remote learning and occurred less frequently.
  - Meaningful group work did not often occur.
- From both the student and teacher perspectives, student-to-teacher interactions were limited during remote learning and also occurred less frequently.
- A large proportion of students reported that they felt their teachers did not know them well as learners; this sentiment was also reported by teachers as well.
- While teachers perceived students' experience with remote learning more negatively, student responses express an equal divide regarding their preference for and enjoyment of remote learning.

## VALUE OF STUDY:

This study serves to help future online educators so that they may reflect on the strengths and weaknesses of remote learning from the perspective of students and teachers at Leominster High School. In particular, future online educators should use these perspectives to enhance student-to-student and student-to-teacher relationships and communication.