*International Journal of Arts Humanities and Social Sciences Studies*
*Volume 6 Issue 10 ǁ October 2021*
*ISSN: 2582-1601*
*www.ijahss.com*

# Shortage Of Social Support In High School Online Learning During COVID-19

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***Abstract :*** *After the World Health Organization declared the novel coronavirus outbreak a global pandemic, many schools in the United States adopted some form of online learning. To measure the impact that different education frameworks have had on high school students' academic performance, educational satisfaction, and social support, an online survey was distributed to 302 students at a public high school located in a suburban area of Eastern Shore. Data were analyzed through ANOVA, which found > 95% significant differences in questions regarding participation and interaction with teachers and peers. On the other hand, no significant difference was found among questions regarding educational satisfaction. The study finds that most students who received an in-person education felt more supported and comfortable with their classmates and teachers. In addition, some online students preferred in-person learning yet alternatively choose online learning due to COVID-19 concerns. Based on these findings, schools may encourage students to participate in in-person learning by making school a safer place through various safety arrangements. Schools unable to host in-person learning due to major COVID concerns should utilize strategies, such as break-out rooms to promote sharing and discussion, to increase communication and interaction between students in online courses.*

***Keywords:*** *covid-19, educational preference, in-person learning, online learning, social support, high school education.*

## I. INTRODUCTION

The concept of online education has been in place since the advancement of the Internet and electronic devices. Although it was sparsely used in the past, and was mainly employed in post-secondary and part-time education, online education has become more prevalent out of necessity because of the COVID-19 pandemic [1]. Since the World Health Organization declared the novel coronavirus outbreak a global pandemic, different schools have instituted different policies and formats to continue providing instruction, depending on their location, COVID severity in the area, and their administration. However, the rise of online learning remains a common trend despite different regulations [2].

Most research notes that online education is not as effective as in person education because students tend to lose interest while learning alone and are surrounded by distractions at home that lead to a lack of self-control [3]. In addition, lack of social contacts leads to emotional instability [4]. Conversely, studies also find online learning to be more convenient because it is easily accessible for students on their devices in various locations without the need to commute [5]. After pursuing previous research about the influence of COVID-19 on education, it becomes evident that further studies about high school students and the particular aspects of education impacted by the pandemic is important. For example, in a self-study, Jason Anthony Singh describes how lockdown either intensified or reduced psychological separation, students' perceived detachment from their peers [6]. However, the study only focused on the psychological separation of students in online learning, therefore failing to consider other factors that influence the quality of education. In short, there has been no research specifically comparing online learning, hybrid learning, and in-person learning of high school students during the pandemic. Moreover, most studies conducted on online education are centered around undergraduate and graduate students. For example, research at the Victoria University of Wellington, Hong Kong Polytechnic University, Mulawarman University, New York University, and Bishop Cotton Women's Christian College were all conducted on university students [3] - [5], [7], [8]. To accommodate for the immense changes in learning, high school education should also be considered because high school students have a unique educational experience and are subject to different stressors, such as smaller class sizes, applying to colleges, etc. As a result, this study is unique as it is the only one that compares all three different forms of learning (in-person,

online, and hybrid) for high school students concurrently studying at the same institution during the COVID-19 pandemic.

This study aims to compare the effectiveness of different formats of learning for social support, educational satisfaction, and academic performance. Social support refers to the overall perception of inclusivity and care, which is critical for promoting positive academic and psychosocial outcomes for students [9]. Educational satisfaction refers to the convenience of the learning experience, which is a significant predictor of learning outcomes and evaluates the effectiveness of learning through the students' point of view. Finally, academic performance refers to test scores such as SAT, ACT, and AP, which are major components for university enrollments. In addition, these scores could help evaluate the sample size in comparison to the academic performance of average US high school students.

What impacts do different learning systems have on a student's perceived social support based on their performance, engagement, and satisfaction? Taking into account of past studies, the hypothesis for this study is that in-person learning will lead to the best results in terms of educational satisfaction and social support while academic performance will not be affected significantly. In-person learning is expected to positively affect educational satisfaction and social support because teachers are more able to ensure that students are engaged during an in-person class. Conversely, academic performance is not expected to be affected due to teachers becoming more lenient in grading as a result of students' added stress from the pandemic, such as the possibility of getting infected with COVID or their parents losing jobs during the unprecedented economic downturn. In addition, factors that contribute to students' academic performance, such as SAT/ACT scores and GPA, encompass academic performance of all four years of high school. Ultimately, a period of online education may not be enough to drastically change academic performance. Therefore, academic performance should be similar to that before COVID-19.

School administrators and teachers play an essential role in providing the best type of online education possible to avoid breaks and barriers in the students' education. Results from this research could be used to identify the specific flaws and limitations of online education in the hopes of improving it. Even though schools will eventually return to in-person learning after the pandemic, some aspects of online education such as self-learning platforms (Khan Academy, AP Classrooms) and note-taking apps (Goodnotes, Notability), are expected to continue [10]. In addition, many universities and companies have already offered current students and employees the option to continue to study and work remotely. It is important for schools to stay prepared in case of a similar situation that forces them to move online. This study aims to serve as an insight for administrators and teachers to better understand their students and provide effective measures to aid their students' educational journey.

## II. METHODOLOGY

This investigation was conducted through surveys that were distributed to students at Princeton High School, a local public high school in Princeton, New Jersey with a student population of 1,582 [11]. In the 2020-2021 academic year, the school established a stable format of online learning, hybrid learning, and in-person learning with regards to COVID safety precautions for its students.

Princeton High School is an appropriate high school for this study because it offers in-person, online, and hybrid learning for its students. By conducting the study in Princeton High School, confounding variables resulting from different school systems and student populations can be eliminated, allowing for a more accurate comparison between the different forms of learning. In addition, Princeton High School is ethnically diverse with 48.7% of its student body consisting of people of color (51.3% White; 26.4% Asian; 12.5% Hispanic; 4.6% African American; 0.1% American Indian; and 5.2% Multiracial), allowing for an accurate representation of the broader US population [11].

The online survey was distributed through social media and teachers over the span of two weeks, between June 8 and June 21, 2021. A total of 302 survey responses were collected; and 12 responses were deleted due to participants' ineligibility. No incentives were provided for participating in the survey, and no information regarding the participants' identities was collected. The survey consisted of 28 questions on the following issues: eligibility and consent; educational satisfaction; social support; educational preference; academic performance; and demographics. The questions were Likert scale, multiple choice, and fill-in-the-blank. For the Likert scale questions, students' attitudes were measured on a 1-6 scale (higher rating indicates more favorable perception of the learning format). By using an even-numbered scale without a neutral or moderate option, students had to clarify their attitude while providing a range sufficient for flexibility of response. For further details on the survey, see appendix.

### *A. Data Analysis*

ANOVA was used to analyze the results of Educational Satisfaction and Social Support; and descriptive analysis was used for Academic Performance. The data was compared based on in-person, hybrid, or remote learning.

## III. Figures and Tables

Table I
**Learning Methods of Participants**

| Format of Learning | Percentage | Frequency |
|---|---|---|
| Online | 45.5% | 39 |
| Hybrid | 13.4% | 119 |
| In-Person | 41.0% | 132 |
| Total | 290 | |

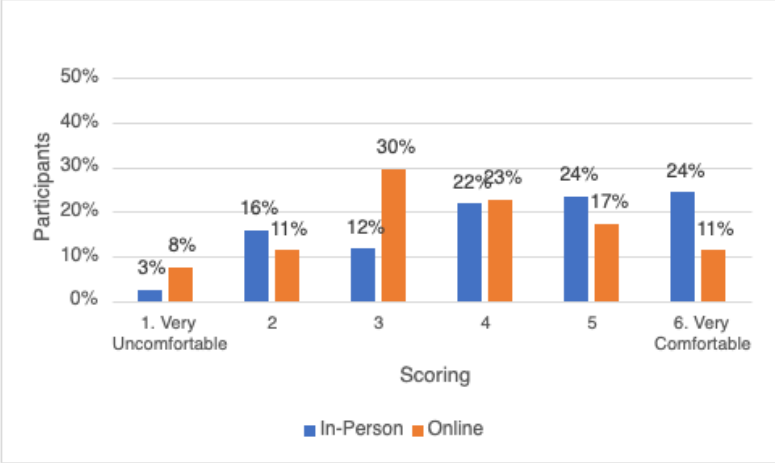


Fig. 1. "On a scale of 1-6, how do you feel about participating in class?" In-person learning is significantly different from online learning with p- value 0.007 < 0.01.

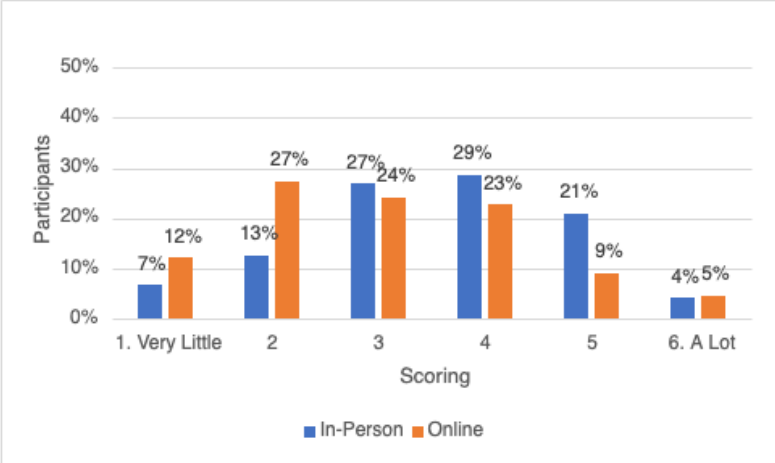


Fig. 2. "On a scale of 1-6, how much do your teachers know about you (perhaps think about writing recommendation letters)?" In-person learning is significantly different from online learning with p- value 0.004 <0.01.

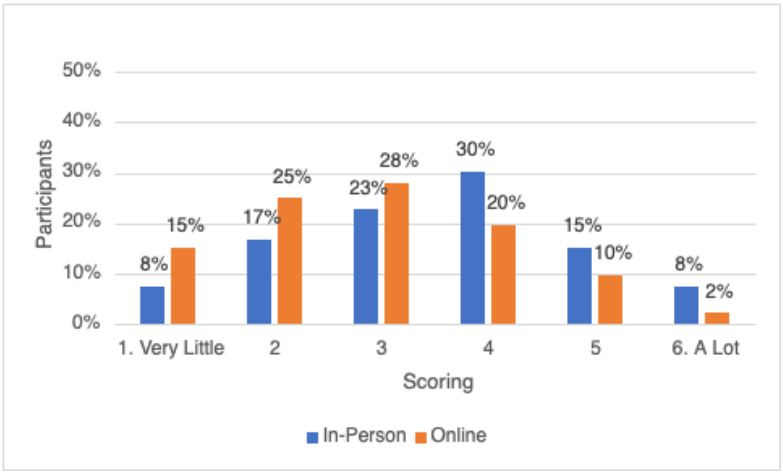


Fig. 3. "On a scale of 1-6, how much do your classmates know about you?" In-person learning is significantly different from online learning with p- value 0.001 <0.01.

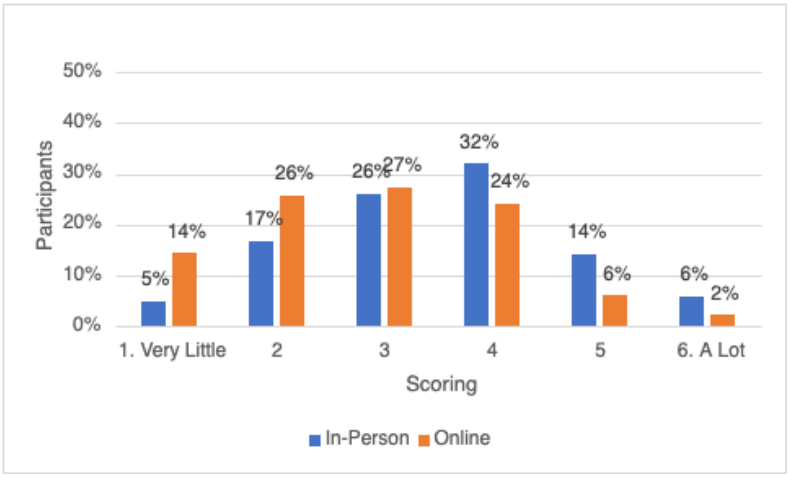


Fig. 4. "On a scale of 1-6, how much do you know about your classmates?" In-person learning is significantly different from online learning with p- value 0.02 <0.05.


Fig. 5. "On a scale of 1-6, how do you feel about the amount of interactions in your classes?" In-person learning is significantly different from online learning with p- value 0.004 <0.05.

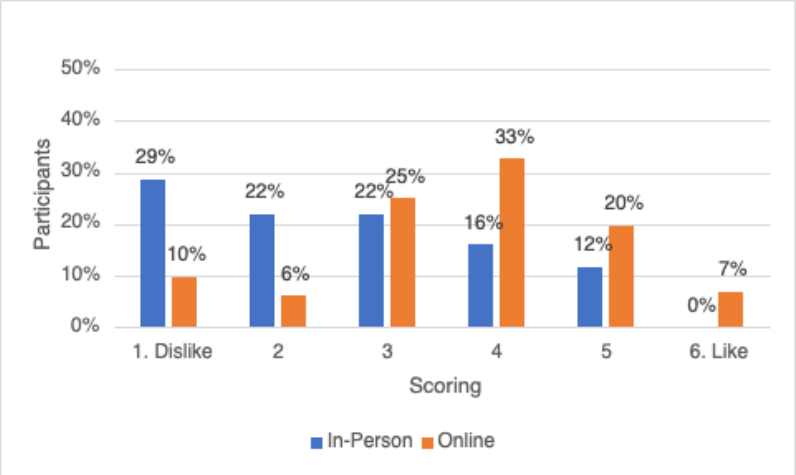


Fig. 6. "On a scale of 1-6, do you like learning on the internet?" In-person learning is significantly different from online learning with p- value 0.03 <0.05.

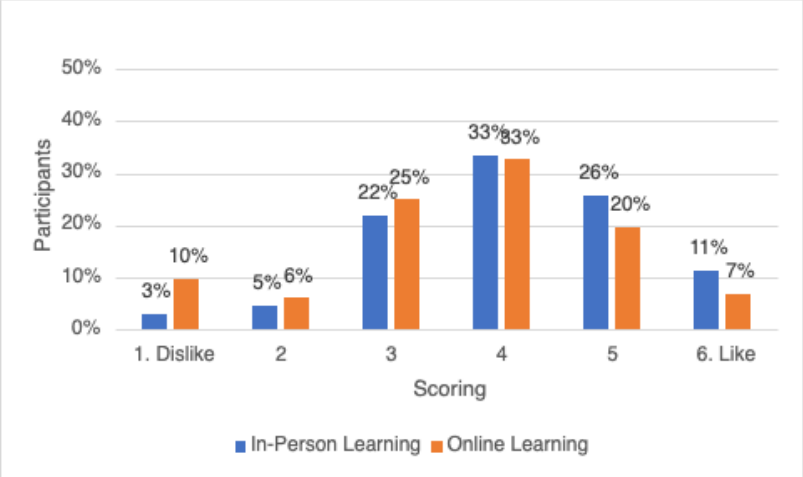


Fig. 7. "How do online students like these specific types of learning?" In-person learning is significantly different from online learning with p- value 0.001 <0.05.

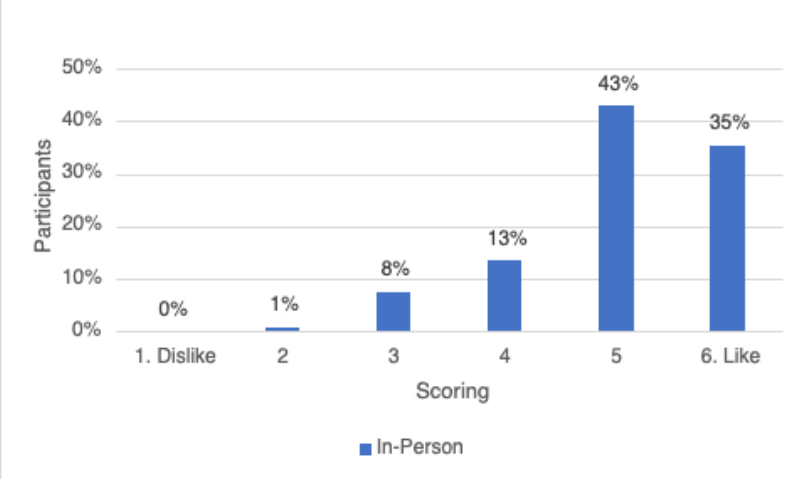


Fig. 8. "How do in-person students like in-person learning?"

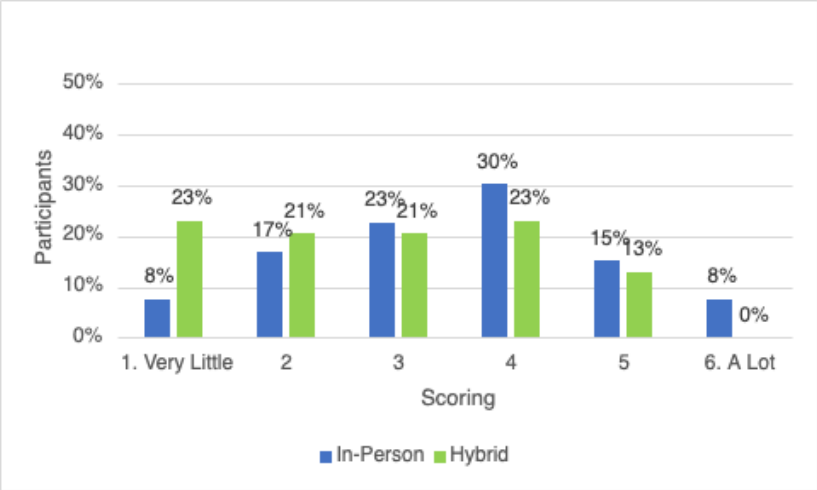


Fig. 9. "On a scale of 1-6, how much do your classmates know about you?" In-person learning is significantly different from online learning with p- value 0.01 <0.05.

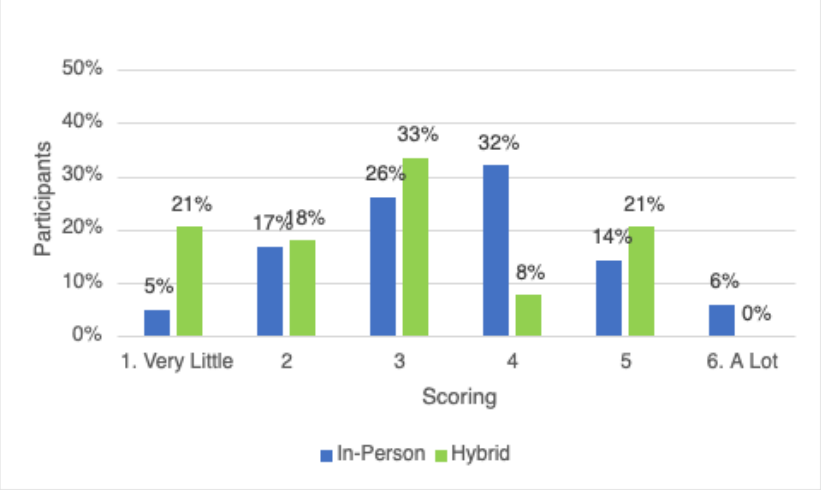


Fig. 10. "On a scale of 1-6, how much do you know about your classmates?" In-person learning is significantly different from online learning with p- value 0.02 <0.05.

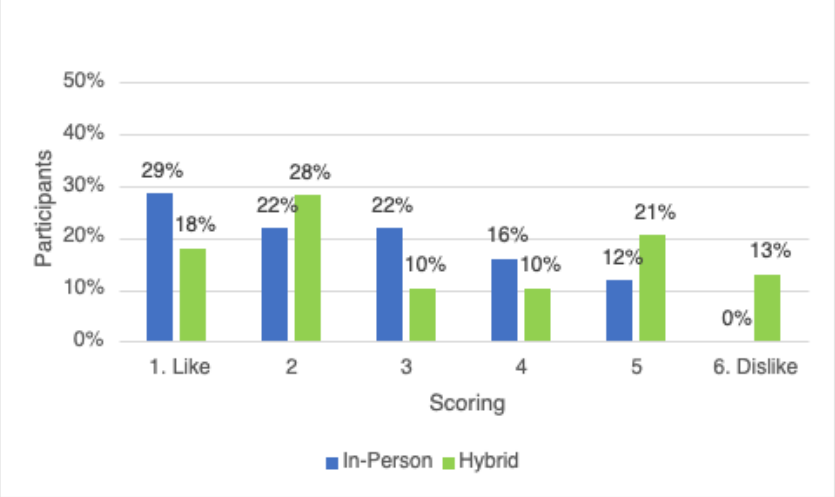


Fig. 11. "On a scale of 1-6, how do you like online learning on the internet?" In-person learning is significantly different from online learning with p- value 0.03 <0.05.

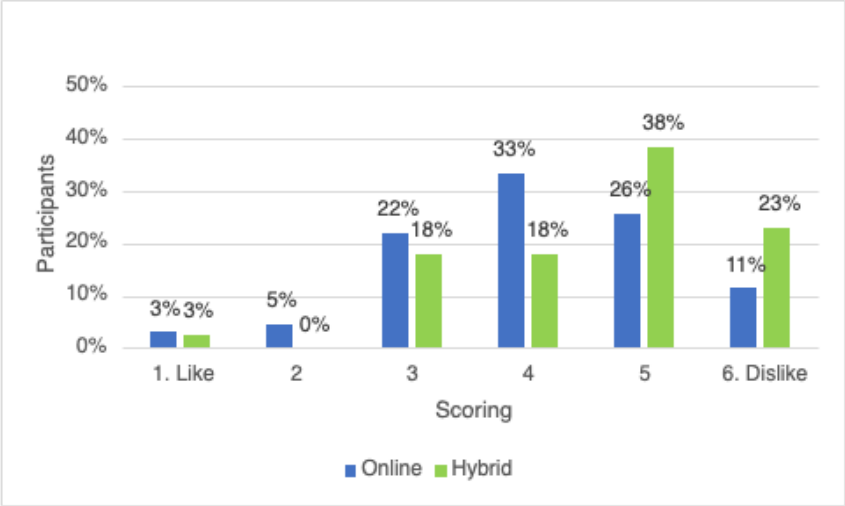


Fig. 12. "On a scale of 1-6, how do you like in-person learning in the classroom?" In-person learning is significantly different from online learning with p- value 0.03 <0.05.

## IV. RESULT ANALYSIS

The focus of this research was to better understand high school students' perception and experience of their specific methods of learning during the COVID-19 pandemic. Data was collected to determine if in-person learning will lead to the best results in terms of educational satisfaction, social support, and academic performance. While in-person learning indeed led to the best results for social support, this type of learning did not seem to affect educational satisfaction and academic performance.

The study found that in-person learning was the most effective form of learning in terms of giving students the social support they need. In other words, in-person students generally felt more comfortable and satisfied with their methods of learning compared to online students. Even a significant amount of online students seemed to really enjoy in-person learning, indicating in-person learning to be the more popular option regardless of students' actual choice. This also indicates that students may choose online learning based on factors other than their individual preferences. Finally, hybrid students showed no significant preferences for in-person or online learning; this is expected as hybrid students regularly switch between in-person and online learning, never fully integrating into one specific method of learning.

### *A. Online vs. In-Person*

1. ***Social Support:*** In terms of class participation, in-person students seemed to feel more comfortable compared to online students. As shown in Fig. 1, among in-person students, 48% answered between 5 and 6 while 53% of online students answered between 3 and 4. A possible explanation for this could be that in-person students have the ability to share their ideas with their peers and teachers face-to-face, while online students may feel uncomfortable talking and sharing online, especially if most students have their cameras turned off.

   Regarding communication with teachers, in-person students were more likely to feel known by their teachers when compared with their online counterparts. As shown in Fig. 2, 56% of in-person students answered between 3 and 4, while 51% of online students answered between 2 and 3. A possible explanation for this could be that face-to-face interaction that in-person students have with teachers allowed for a more comfortable student-teacher relationship. In addition, in-person students spend more time with their teachers because they have to physically be present in the classroom. Conversely, online students lack such interactions as they can quickly enter and leave the class with a simple click of a button on their computer.

   Regarding interaction with classmates, in-person students were more likely to feel known or know their classmates compared to their online counterparts. When asked about classmates' knowledge of themselves, 53% of in-person students answered between 3 and 4, while 53% of online students answered between 2 and 3 (see Fig. 3). Similarly, when asked about their knowledge of their classmates, 58% of in-person students answered between 3 and 4, while the 53% of online students answered between 2 and 3 (see Fig. 4). A possible reason for this could be the explanation stated before: in-person students spend more time in the classroom and have the comfort of face-to-face interaction. Another reason could be that teachers are more likely to have group assignments for in-person students

rather than for online students. While group assignments are not exclusive to the classroom, online students work independently with their sounds and cameras off. Putting students physically in a group forces them to work together while online students may still find ways to work independently.

Finally, in-person and online students felt that there was a similar amount of interactions in their classes. As shown in Fig. 5, 51% of in-person students answered between 3 and 4, and 56% of online students answered between 3 and 4. This could be due to the fact that many teachers still require their in-person students to log onto Zoom in school; thus both online and in-person students share the lack of interactions that come from using the Internet in their class time. As a result, there is mostly a lack of interaction among both in-person and online students.

2. ***Educational Preference:*** Based on the survey results, there was an overall preference for in-person learning.

When asked to rate their chosen method of learning, in-person students seemed more satisfied with in-person learning than online students were with online learning. As seen in Fig. 6, the majority of online students (58%) answered between 3-4 and 10% of students chose 1 (see Fig. 6). Because students have the option of choosing between the different types of learning, this could indicate that online students are not all necessarily happy with their choice. Surprisingly, when asked if they like in-person learning, 11% of online students answered 6, which was more than the amount of students (7%) who chose in favor of online learning, as shown in Fig. 7. Conversely, shown in Fig. 8, the majority of in-person students seemed satisfied with in-person learning: 0% answered 1; and 78% answered between 5 and 6. An explanation for this could stem from the decision-making process: the greater satisfaction of in-person students is from willingly choosing that option, while the lesser satisfaction of online students is their obligation to choose online education because of pandemic concerns. The overall preference for in-person learning among all students demonstrates that online learning could be improved to some degree.

### *B. In-Person vs. Hybrid*

1. ***Social Support:*** The responses of hybrid students were dispersed between all the answer choices. This was inconsistent with in-person students whose responses tend to indicate a clear majority.

When asked about their knowledge and perception of their classmates, the results of in-person students were more consistent compared to their hybrid counterparts. As seen in Fig. 9, when asked about classmates' knowledge of themselves, 53% of in-person students answered between 3 and 4 while hybrid students were more dispersed from 1 to 4. Similarly, when asked about their knowledge of their classmates, 58% of in-person students answered between 3 and 4, but hybrid students were dispersed among 1, 2, 3, and 5 - shown in Fig. 10. The dispersed result could be because hybrid students partake in both online and in-person learning. Surprisingly, none of the hybrid students answered 6. This may be due to hybrid students constantly switching between online and in-person learning every week, leaving them with insufficient opportunity and time to get to know their classmates.

2. ***Educational Preference:*** Hybrid students showed more preference for online learning than in-person students did.

When asked to rate their perception of online learning, hybrid students seemed to favor it more than in-person students. Similar to social support, the results of hybrid students were dispersed from choices 1 to 6, while the majority of in-person students (73%) answered between 1 to 3 (see Fig. 11). The mean of hybrid students' responses was 3.26 while the mean of in-person students' responses was 2.61. In addition, 0% of in-person students chose 6, while 13% of hybrid students chose 6 (see Fig. 11). It is expected that hybrid students will prefer online learning more than in-person students because they voluntarily chose to have half of the education online, while in-person students chose to have none of their education online.

### *C. Hybrid vs. Online*

1. ***Educational Preference:*** Hybrid students seem to prefer in-person learning more than online students. The mean of hybrid students' responses was 4.59 while the mean of online students' responses was 4.08. 61% of hybrid students answered between 5 and 6 (See Fig. 12). Conversely, 59% of online students answered between 4 and 5 (See Fig. 12). It is expected for hybrid students to prefer in-person learning more than online students as they chose to have half of their education in-person while online students did not. Nonetheless, it is important to note that both groups answered on the higher end of the spectrum, despite neither choosing to be fully in-person. This indicates the possibility that while

students may prefer in-person learning, they chose hybrid or online learning due to other concerns such as precautions related to COVID-19.

### *D. Limitations*

In terms of Educational Satisfaction, no significant differences were found between all three different forms of learning. A possible reason for this could be that all students, regardless of their chosen type of learning, still share the same teachers, class time, and amount of homework and tests.

Another limitation of the study was the academic status of the sample groups. Based on the responses for Academic Performance, the sample group performed above average academically. The average unweighted GPA of the sample size was 3.81, which is higher than the 3.00 average GPA of high school students in the United States [12]. Likewise, the average SAT score of the sample size was 1425, which is ranked around the 98th percentile [13]. This could be because the Academic Section was optional to ensure that students who are uncomfortable with sharing their academic statistics would still be willing to answer the rest of the survey. Future studies should evaluate whether or not students' academic performances influence their perception of the level of social support they receive.

Another limitation of this study is the inability to ensure diversity in the sample. This is because the survey was distributed randomly to students who volunteered to complete it. As a result, the gender, ethnicity, and grade level ratio of the sample size does not exactly reflect the demographics of Princeton High School students and may not be representative of US high school students as a whole. Regardless, this study has a sufficient sample size for each of the different forms of learning, thus the data can still provide accurate comparisons among them.

A final limitation of this study is that it did not fully encompass the school's learning. PHS students have the ability to switch their form of learning every quarter; so it is possible for a student labeled in one specific method of learning group in this study to have actually participated in multiple methods of learning. Future studies should evaluate long-term education by following students in their specific methods of learning throughout the school year. A longitudinal study of a smaller group of students could also be beneficial in gaining more insight. Nonetheless, this study is beneficial in providing a broad view of high school students' education during the COVID-19 pandemic.

## V. CONCLUSIONS AND SUGGESTIONS

High school education has undergone dramatic changes in the past year due to the COVID-19 pandemic. The need to social distance to avoid the spread of the virus has forced schools to implement online and hybrid learning options for their students. As a result, high school students received three different types of learning experiences for the 2020-2021 school year: in-person, online, and hybrid learning.

Based on qualitative data received from surveys that were distributed to students of a public high school, it can be concluded that in-person students generally feel more supported and comfortable with their peers and teachers. In addition, online students are not as satisfied with online learning as in-person students are with in-person learning. In fact, some online students actually prefer in-person learning despite choosing to partake in online learning. Finally, as hybrid students are constantly switching between in-person and online learning, they never fully integrate into one specific method of learning.

To ensure that students have the same amount of social support during online learning as they would have during in-person learning, it is recommended for academic institutions to encourage more student-to-student interactions and to utilize different online activities to promote a collaborative environment. For instance, teachers can host in-person office hours that still abide by COVID-19 regulations outside of class time to boost student participation; and teachers can socially support students by regulating club activities and breakout rooms. While it will be challenging for some school functions to fully convert to an online format, hosting traditional school events, such as weekly club meetings on Zoom or online proms, will offer students the sense of community characteristic of in-person learning. Even subtle actions such as deleting students' names on Zoom to compel students to learn each other's names would help them to better communicate. By creating more opportunities for students to interact with their teachers and fellow classmates, students will most likely feel more comfortable, and consequently, perceive social support in online learning to be similar to that of in-person learning.

In addition to extra online events that educational institutions can administer, schools should maintain COVID-19 regulations along with supplemental health precautions. Schools intending to reopen amidst the pandemic should implement mask regulations, encourage vaccinations, enforce social distancing, and adjust class sizes as needed. A result of this study is that some students choose online learning over in-person learning due to safety concerns regarding COVID-19, despite preferring in-person learning. To address these concerns, schools could take additional precautions, like moving classes outdoors or educating students and faculties about

vaccination. Without enough social support, students may feel unmotivated to work or uncomfortable to communicate with their teachers and classmates. By making online learning more interactive, students may be able to thrive socially and, in turn, better adapt to the shift in learning methods during the seemingly never-ending pandemic.

Building upon this research, future studies should evaluate students throughout an academic year to provide a more detailed picture of their long-term learning experiences. Future studies could also be conducted to examine if results change with reduced COVID-19 cases. As the pandemic comes to an end, students' comfort level in school can be expected to increase and stress levels related to the pandemic to decrease. In addition, with the easing of mask regulations, interactions between students and teachers in classes may increase, thus increasing social support for students [14]. As schools structure their education to adapt to the post-pandemic reality or to consider future circumstances, in order to increase the level of social support for all students, school administrators and educators should implement more efficient and stable learning environments and systems.

## VI. ACKNOWLEDGEMENT

We thank Princeton High School for supporting this research and distributing the survey. We thank Dr. Dana Hayward at Brown University, Dr. Rick Miller, Dr. Douglas Levandowski, Jennifer Smolyn, Jacqueline Katz, Elizabeth Taylor, Andrew Schovanec, Kim Peng, Ashley Kang, and Kung Hsiang-yu for technological assistance and many discussions with the authors.

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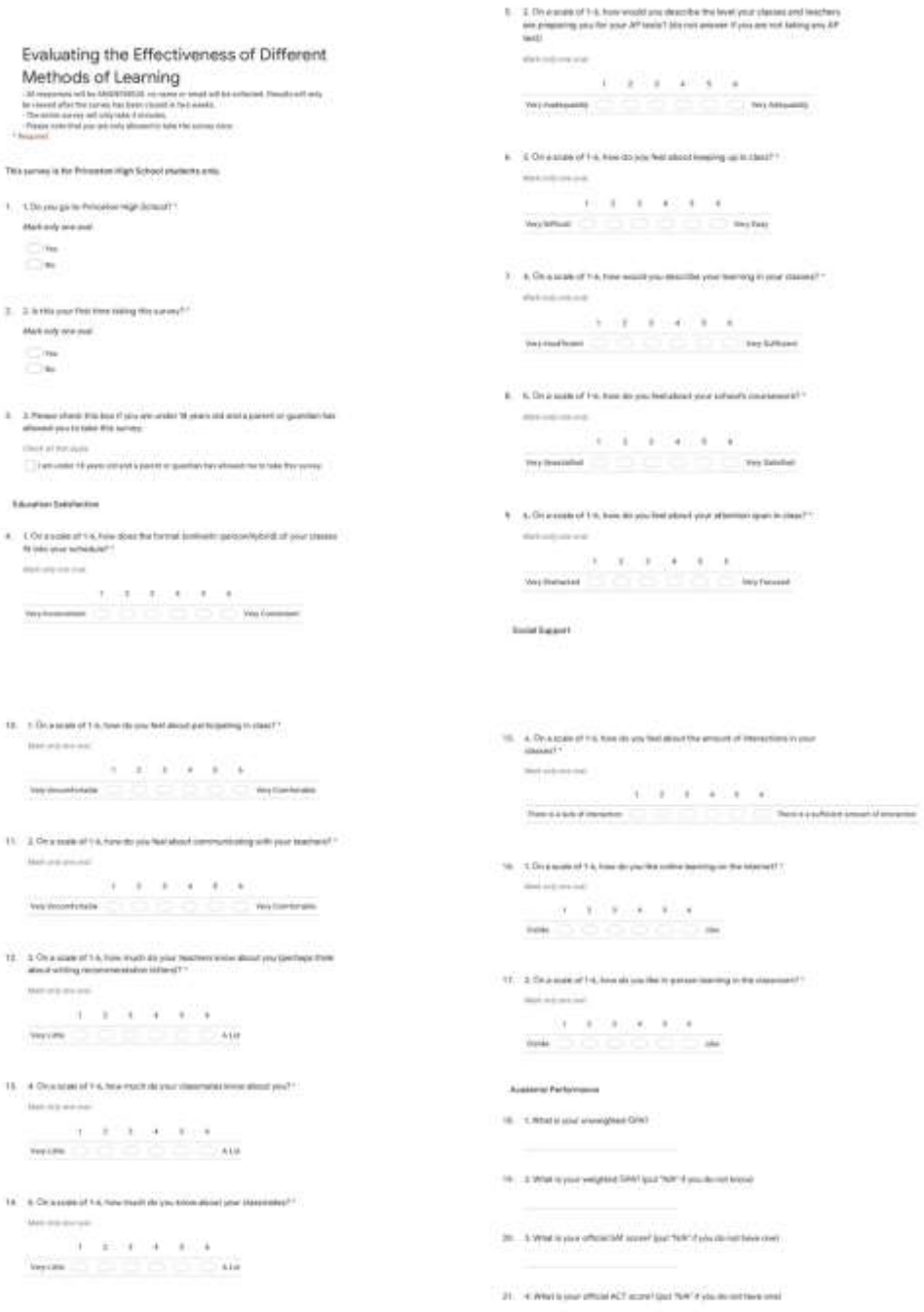
**APPENDIX**



Evaluating the Effectiveness of Different Methods of Learning

The first part of the survey, Eligibility and Consent, ensured that participants were current students at Princeton High School and were taking the survey for the first time; those who answered otherwise were deleted and not used during data analysis. In addition, consent was collected for students over the age of 18, and parental consent was collected for students under the age of 18.

The second part of the survey, Educational Satisfaction, focused on the satisfaction students received from their specific method of learning, including the convenience of class format, the effectiveness of teaching in preparing for exams, etcetera. Responses would determine the effectiveness of the specific learning-format in tailoring the students' educational needs.

The third part of the survey, Social Support, focused on students' perceived support, such as the students' comfort level in class with their teachers and classmates. Responses would evaluate how comfortable and inclusive students felt the specific format of their classes was.

The fourth part of the survey, Educational Preference, simply asked which format of learning students preferred more: online or in-person. Understanding the students' preferred method of learning provided insight into how they responded to the other questions in the survey.

The fifth part of the survey, Academic Performance, mainly focused on students' statistics in school: grades, test scores, and the difficulty level of classes. These questions helped provide a more thorough picture the student sample.

The final part of the survey, Demographics, asked about participants' chosen method of learning, grade level, gender, and ethnicity. These questions allowed deeper insights into the type of participants in this study.