

The Impact of COVID-19 on Students' Academic Motivation

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Abstract

COVID-19 has greatly impacted the way schools function on a daily basis. This study aims to determine how high school students' academic motivation was affected by COVID-19 and the various models of learning: hybrid, online, and face-to-face. In terms of this study, the model of learning was defined as the educational setting where the student is participating in school for this academic year. The first hypothesis states that all students are less motivated during COVID-19 than they were before COVID-19. The second hypothesis states that students who participate in a face-to-face learning model are more motivated than students who participate in hybrid learning and online learning. To test the hypotheses, an online survey was distributed to high school students in a suburban area. Respondents were divided into three groups based upon the model of learning they participate in and were asked to respond to a series of questions about their motivation both during and prior to COVID-19. The results showed that students were more academically motivated before COVID-19 compared to during COVID-19 and that the model of learning affected student's academic motivation in-class. Moreover, students amongst all three learning models struggled more to find motivation during COVID-19 than before COVID-19. Additionally, students' academic motivation did not vary between the three models of learning during COVID-19. Therefore, future research should look into permanently implementing an online model of learning into schools.

Keywords: academic motivation, online learning, COVID-19

Introduction

COVID-19 caused a dramatic shift in the school experience for both students and teachers. Students were forced to change the way in which they learned. The new and rapid changes impacted the responsibilities of students. Not only is it important to recognize what students went through during the pandemic, but teachers need to know how to approach a similar situation in the future. On top of that, the administration can take note for future school policies which would incorporate positives and negatives to support the students. The research question this study aims to answer is: How does online, hybrid, and face-to-face learning affect high school students' academic motivation level during the 2020-2021 school year compared

to prior years? This study seeks to look into two different hypotheses.

Prior to COVID-19, a majority of high school students attended school face-to-face five days a week ("Facts: Is Online"). In addition to that, students typically spent 35 hours a week learning for about 180 days of the year (Christakis, 2020). While the amount of time students spent attending school was still the same as previous years, COVID-19 greatly impacted how schools functioned on a daily basis. First of all, it was less common for all students to attend school face-to-face every day. A vast majority of schools offered students three different ways to participate in school: hybrid, online, and face-to-face. According to Garrison and Kanukais (as cited in Hrastinski, 2019), hybrid learning is defined as "the

thoughtful integration of classroom face-to-face learning experiences with online learning experiences” and was a relatively new concept that many high schools began to offer since the outbreak of COVID-19. Online learning was another option which allowed students to continue learning daily, but from the comfort of their own home. The final option was face-to-face which enabled students to attend school as they did prior to the pandemic. The combination of these three options allowed students to learn safely during COVID-19.

During the pandemic, public safety guidelines specified that students and teachers could not stand within six feet of each other, therefore limiting the number of students allowed in one classroom (Centers for Disease Control and Prevention, 2021). According to Brookshire (2020), it was difficult for some students to identify how far six feet is. As a solution for crowded cafeterias and hallways, schools placed dots on the floor to indicate where to stand. Goldstein (2020) stated that upon arrival at school, students' temperature was likely to be taken as this could have helped to prevent the spread of the coronavirus. Furthermore, some students could be online learning while in class under unique circumstances (Goldstein, 2020). The pandemic put students in a new and unexpected situation, making it a difficult transition for them. However, with various models of learning and rules set forward, teachers continued to safely educate students.

Classroom Engagement

The dramatic shift from solely face-to-face learning to hybrid and online learning may have impacted students' motivation in the classroom as well as teachers' ability to keep their students motivated throughout the class period. In order for students to be academically successful, engagement in the classroom was important (Cooper, 2014). For students to be continuously engaged during class, teachers must be aware of

what they should be incorporating into class lessons. Research by Howard (2016) found that to increase classroom engagement and motivation, a choice board option, with the inclusion of technology, was suggested. Another recommendation was for students to flaunt their knowledge through various projects, such as writing stories (Howard, 2016). Developing upon this idea, having projects with numerous aspects allowed students to connect personally, keeping them motivated to be successful (Beffa-Negrini et al., 2002). As studies have shown, keeping students motivated was critical for success; however, the change in learning environment for students during COVID-19 may have affected their level of academic motivation and has yet to be studied.

Student and teacher relationships are important factors in a successful classroom. Studies found that students who trust their teachers and actively participate in class activities allow for a highly functional classroom (Gregory & Ripski, 2019). During COVID-19, with students participating in one of the three models of learning, it was difficult for teachers to run class smoothly and effectively.

Student Success

The success of students within class was found to be dependent on several factors. It was important to note that students who set achievable academic goals, especially those who are struggling, were more likely to feel an incentive to complete their work. More often than not, those same students eventually make noticeable progress in the class (Margolis & McCabe, 2003). Harmonious with previous studies conducted prior to the pandemic, improving study habits, through a utilized study plan and hard work, was crucial to improving academic performance (Sharma, 2017). On top of that, teachers should be supporting their online students both technically and technologically as it will help to fulfill the students' expectations of their course (Sahin &

Shelley, 2008). The availability of technology and online resources allow teachers to continue teaching students successfully, despite the circumstances (Mukhopadhyay et al., 2020). However, encouraging internet use for reasons other than to learn and to collaborate with others negatively impacted students' motivation as they were more likely to use the internet for help with their course assignments (Reed & Reay, 2015). Literature investigating education prior to the pandemic indicated that technology has been integrated into classrooms, but the increased dependence on the internet is a potential for distractions to students and has yet to be studied under these new learning circumstances.

With COVID-19 requiring a rapid change in learning environments for students, previous literature isn't sufficient enough in understanding students' success as many changes have been made to how a school day works. Thus, research is needed to analyze how students' motivation in various categories, such as homework, in-class, and testing, may have changed during COVID-19 in various models of learning.

Student Satisfaction and Grades in Different Learning Environments

Research analyzed the difference in students' satisfaction in an online learning course and a face-to-face learning course. While online learning was a concept for many years that continuously improves as time goes on and technology advances, it was determined that students participating in an online course were less satisfied than those who were in a face-to-face course (Tratnik et. al, 2019). Although students in both an online learning course and a face-to-face learning course appeared to perform similarly on exams, it was likely that those online had suffered as they were not as pleased with the course (Lyke & Frank, 2012).

Academic Integrity

Honesty in the classroom is the base for students' success, and it can be difficult to monitor students' honesty in an online model of learning. Research conducted by Tsai (2016) found that there was always some academic misconduct among undergraduate students despite the testing environment. Not only should teachers and administration be educating students on the significance of honesty during exams with no supervision, but schools should also be enforcing prevention policies (Tsai, 2016). Stress was thought to be a potential factor in students' cheating behaviors. Oftentimes, when students are under pressure during timed exams they make poor choices, leading them to use outside sources for answers (Eaton, 2020). Communication between teachers and students, especially in online classes, was essential to help reduce students' stress and anxiety (Beffa-Negrini et al., 2002). Furthermore, it was especially difficult to test students' understanding of a subject when the exam was proctored online (Tsai, 2016). In spite of that, studies have shown there was less academic misconduct among online students compared to those who are face-to-face. However, those same studies have concluded that students in online courses tend to be older and have chosen to voluntarily take the course (Eaton, 2020).

Surprisingly, while Eaton's research suggests that face-to-face students were more likely to cheat on their exam than online students, it has been found that online students appear to have very similar grades to those who are face-to-face (Lyke & Frank, 2012). It has yet to be known if online and face-to-face students are equally motivated, which could explain why students in both learning models share similar grades (Edmonds, 2006).

Hypotheses

This study aims to answer the following hypotheses: The first hypothesis states that

compared to prior to COVID-19, students during COVID-19 are less motivated. Motivation will be measured through students' homework, class participation, and testing. The second hypothesis states that compared to students who participate in hybrid learning and online learning, participants exposed to face-to-face learning will be more motivated. In terms of this study, the model of learning is defined as the educational setting where the student is participating in school for this academic year.

Method

Participants

Adolescents currently in high school were the suggested population of the present study based upon the research question and hypotheses. High school students were chosen as the participants because they had been greatly impacted by COVID-19 and the introduction of new educational learning models. There is a lack of research examining high school students' motivation based on the model of learning they participate in. This is due to the fact that two of the models analyzed in this study, hybrid learning and online learning, were relatively new concepts across the high schools in the target group. Therefore, this study seeks to fill that gap.

Most high school students examined in this study attended High School X, an anonymous high school located in a suburban area on the east coast. In High School X, the survey was distributed to the Student Body Government as well as history teachers who then distributed it to their students. The survey was also disseminated to different high schools through a collection of a snowball sample. Snowball sampling is a technique where I posted the survey to social media and individuals reposted the survey in order to reach a larger population. It is beneficial for this study to examine data from various high schools as some students may be more competitive than others, thus aiming for high grades despite the learning circumstances.

There is a paragraph explaining the purpose of the survey for participants to read before taking part in the survey. Passive consent was included in this introduction, informing the participants that all data is protected and they may stop taking the survey at any time. In order to distribute the survey, approval was required from High School X's Institutional Review Board (IRB).

Independent Variables

This survey contained three sections pertaining to the variables studied: model of learning and motivation. The independent variable in this study is the type of learning environment: online, hybrid, or face-to-face. Section one (questions 1-6) was related to the model of learning variable. This section was located at the start of the survey and required all participants to answer how they attended school for the 2020-21 school year in order to be directed to the correct series of questions. The questions related to the model of learning variable were included in the survey to provide a deeper context of how hybrid learning functions in the respondents' school. This was essential as not all respondents attended High School X, therefore, not all respondents who participated in a hybrid model of learning followed the same weekly schedule.

Dependent Variables

The dependent variable in this study is academic motivation. In order to measure the variable of motivation in sections two and three (questions 7-48), each question was asked two times. All questions pertaining to the variable of motivation were asked two times in order to compare participants' academic motivation level prior to the coronavirus outbreak to now. The motivation variable was broken down into five sub-variables: homework, class, school, tests, and further motivation questions. This was done to ensure motivation was measured in various aspects. While all questions were self-developed, they were inspired by previous literature that

determined factors that influence students' motivation. A study done by Park et al. (2019) found that persistent participation in a hybrid course improves students' performance. Therefore, questions related to student participation while in class were asked to all participants. In order to measure homework motivation, participants were asked questions regarding their effort when homework is assigned to them. Class motivation was measured by considering if the participant is engaged throughout class. By asking participants to consider whether they enjoy school, school motivation was measured. Test motivation was measured through preparation for tests. Lastly, further motivation questions were included, focusing on how much time participants spend doing various school related efforts. Most questions collected participants' data using a 5-point Frequency Likert Scale. In the second section, all questions were asked relating to the 2020-21 academic school year, and in the third section all questions were asked relating to school prior to the pandemic.

The last section of the survey consisted of demographic questions (questions 49-52) to gather information about the sample population.

Procedure

After reviewing previous literature, it was concluded that a survey was the most appropriate method to gather data. A survey aligns with this research because it allows for an easy comparison of students in different learning models as well as students' motivation before COVID-19 to during COVID-19. Furthermore, a survey allows for participants to be directed to a certain section based on their response to the model of learning they participate in. A rough draft survey was developed through Google Forms. A pilot survey was then executed on a group of students from High School X to ensure the survey was reliable and there were no grammatical errors. After receiving peer feedback, any necessary changes were made before the survey was distributed

through social media platforms, such as Snapchat and Instagram, and Canvas emails from social studies teachers and the Student Body Government to students at High School X.

Analysis

After transferring the results into the Statistical Package for Social Science (SPSS), the data collection was analyzed and paired samples t-tests and one-way between-subjects ANOVAs were conducted. A paired samples t-test is used to compare the means of two variables in the same group. In this research, it was used to compare students' academic motivation prior to COVID-19 to during COVID-19. A one-way between subjects ANOVA is used to compare the means of three or more groups. In this research, it was used to compare students' motivation between the three models of learning during COVID-19.

Results

Hypothesis 1: All students are less academically motivated during COVID-19 than before COVID-19

A paired samples t-test was conducted to compare the academic motivation of high school students before COVID-19 and during COVID-19. As depicted in Figure 1, there was a significant difference in the scores for the academic motivation before COVID-19 ($M=3.71, SD=.559$) and academic motivation during COVID-19 ($M=3.38, SD=.049$) conditions; $t(133)=7.272, p<.001$. The results support the above hypothesis and indicate that high school students were more academically motivated before COVID-19 compared to during COVID-19. This suggests that classroom time was important to overall student motivation.

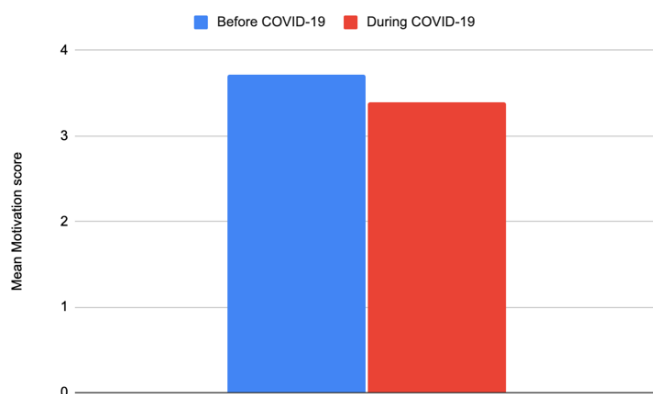


Figure 1. Overall Motivation

A paired samples t-test was conducted to compare the academic homework motivation of high school students before COVID-19 and during COVID-19. There was a significant difference in the scores for the academic homework motivation before COVID-19 ($M=3.89$, $SD=.54$) and academic homework motivation during COVID-19 ($M=3.52$, $SD=.60$) conditions; $t(133)=7.550$, $p<.001$. The results – depicted in Figure 2 – support the above hypothesis and indicate that high school students were more academically homework motivated before COVID-19 compared to during COVID-19. This suggests that classroom time and face-to-face teacher interaction play an important role in students' motivation to complete their homework.

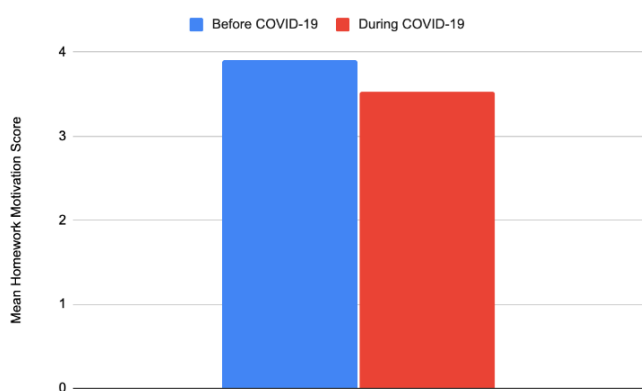


Figure 2. Homework Motivation

A paired samples t-test was conducted to compare the academic motivation of students in class before COVID-19 and during COVID-19. As seen in Figure 3, there was a significant difference

in the scores for the academic motivation in-class before COVID-19 ($M=3.92$, $SD=.70$) and academic motivation in-class during COVID-19 ($M=3.39$, $SD=.73$) conditions; $t(133)=8.761$, $p<.001$. The results support the above hypothesis and indicate that high school students were more academically motivated in-class before COVID-19 compared to during COVID-19. This suggests that there are more distractions for students who learn online.

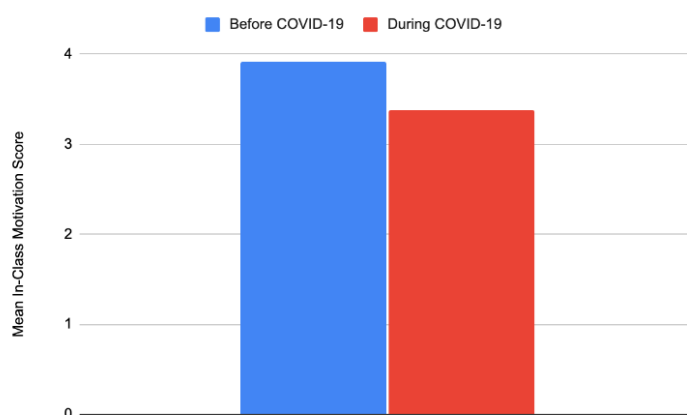


Figure 3. In-Class Motivation

A paired samples t-test was conducted to compare the academic testing motivation of high school students before COVID-19 and during COVID-19. There was not a significant difference in the scores for the academic testing motivation before COVID-19 ($M=3.22$, $SD=.80$) and academic testing motivation during COVID-19 ($M=3.22$, $SD=.72$) conditions; $t(133)=-.027$, $p=.98$. These results cannot reject the null hypothesis and it is possible the insignificance of this result could be due to chance. This suggests that since testing is an individual activity, personal interactions did not impact motivation.

Hypothesis 2: Students who participate in a face-to-face learning model are more motivated during COVID-19 than students who participate in hybrid learning or online learning

A one-way between subjects ANOVA was conducted to compare the effect of different models of learning on students' academic

motivation during COVID-19. There was not a significant effect of the model of learning on students' academic motivation at the $p < .05$ level for the three conditions [$F(2, 131) = 1.176, p = .31$]. These results cannot reject the null hypothesis and it is possible the insignificance of this result could be due to chance.

A one-way between subjects ANOVA was also conducted to compare the effect of different models of learning on students' academic homework motivation during COVID-19. There was not a significant effect of the model of learning on students' academic homework motivation at the $p < .05$ level for the three conditions [$F(2, 131) = .375, p = .69$]. These results cannot reject the null hypothesis and it is possible the insignificance of this result could be due to chance.

A one-way between subjects ANOVA was conducted to compare the effect of different models of learning on students' academic motivation in-class during COVID-19. There was a significant effect of the model of learning on students' academic motivation in-class at the $p < .05$ level for the three conditions, as seen in Figure 4 [$F(2, 131) = 4.854, p = .01$]. The results support the above hypothesis and indicate that students' academic motivation in-class varies depending upon the model of learning in which they participate in.

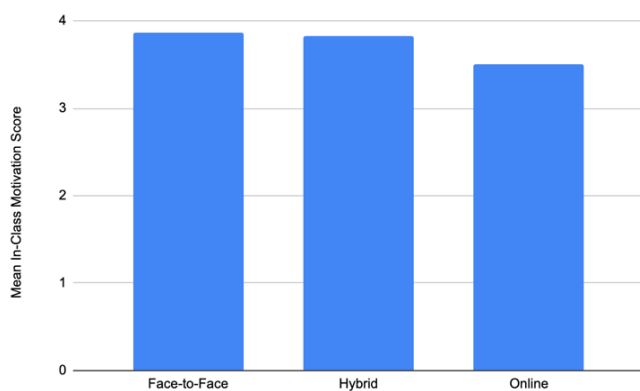


Figure 4. Mean In-Class Motivation Score

While there was a change in students' overall motivation prior to COVID-19 compared

to during COVID-19, there is no significant difference between learning models during COVID-19. This could be due to external stressors during the pandemic and their impact on student motivation.

Due to the significance of the one-way between subjects ANOVA, a post-hoc test was doable. A one-way between groups Analysis of Variance was conducted to compare how high school students' academic motivation in-class was impacted by the model of learning they participate in. Participants were separated into three groups based upon the model of learning they participate in. A Dunnett T3 was conducted since the number of participants in each group varied (10 in face-to-face, 52 in hybrid, and 72 in online). There was a statistically significant difference between hybrid and online students: $F(2, 131) = 4.85, p = .01$.

A one-way between subjects ANOVA was conducted to compare the effect of different models of learning on students' academic testing motivation during COVID-19. There was not a significant effect of the model of learning on students' academic testing motivation at the $p < .05$ level for the three conditions [$F(2, 131) = .346, p = .71$]. These results cannot reject the null hypothesis and it is possible the insignificance could be due to chance.

Overall, when asked how much time spent doing homework and studying during the week and weekend, participants have been spending less time during COVID-19 compared to before COVID-19. These results indicate that students are less motivated in terms of doing homework and studying during COVID-19 compared to before COVID-19.

Discussion

Four paired samples t-tests were conducted in order to compare the motivation of the same group of students before and during a change in learning. Results suggests that after COVID-19, students' academic motivation declined. This was important for schools to consider when all students

returned to face-to-face learning because high school is a time for students to become self-driven in order to be successful. Moreover, the habits students develop in high school may have lasting effects in their adulthood. Therefore, schools should provide support programs and extra guidance to their students in order for their motivation to return to as it was prior to COVID-19. To further understand this result, student motivation was measured for specific academic categories. It was found that students are less motivated to complete homework during COVID-19 compared to before COVID-19. Moreover, students were less motivated in-class during COVID-19 compared to before COVID-19. Thus, teachers should provide various opportunities for students to find motivation during class (Howard, 2016). Interestingly, results also indicate no noticeable shift in students' academic testing motivation prior to COVID-19 and during COVID-19. However, testing was forced to change due to COVID-19, making it a challenge for teachers to proctor tests and students to take tests. Consequently, this result was surprising because some students' tests were open book, so one would expect the students to be less motivated as they could use the internet for answers. This suggests that students did still care about the grades they earned during the pandemic.

Four one-way between subjects ANOVA tests were conducted to compare three separate groups categorized by their type of schooling and their academic motivation during COVID-19. Results indicate that students' academic motivation during COVID-19 does not vary between the three models of learning. This indicates that teachers have been successful in equally educating all three models of learning. In alignment with this, results indicate that the three different models of learning do not impact students' motivation in regards to testing. This answers the question posed in the study conducted by Edmond (2006) of whether students in online and face-to-face learning models are equally motivated when preparing for tests. As

evidenced by the present study, students who partake in online and face-to-face learning models are equally motivated, as are those in a hybrid model of learning. This could explain why, based upon Edmond's study, students in an online and face-to-face learning model earn similar test grades (Edmond, 2006). In line with these findings, results suggest there is no noticeable effect of the three models of learning on students' academic homework motivation. While students' motivation towards homework is consistent amongst the three learning models, as previously mentioned, it has been found that students are less motivated in regards to homework during COVID-19 versus before COVID-19. Results suggest there is an apparent difference in students' motivation in-class during COVID-19. This is dependent upon which of the three models of learning the students participate in. Due to this significance, an additional test, was conducted to determine which of the learning models are statistically different. It was found that students in a hybrid learning model and online learning model are not equally motivated in-class. Research should look at what aspects of in-class activities directly influence motivation in-class and if those characteristics could be utilized in an online model of learning. Therefore, students' motivation in-class should be investigated further.

Limitations

Several limitations prevent this study from being generalized to a broader audience. Firstly, this research focused on student perspectives in relation to different learning models. This does not provide a complete picture of all members of a school community, and future research should consider teacher and administration perspectives to gain a more well-rounded understanding. Additionally, every high school had developed their own hybrid learning model in response to the outbreak of COVID-19. For instance, some schools required all students to participate in online learning every Wednesday, while other

schools simply had their students alternate every day between face-to-face and online learning based upon their last initial. Thus, different students' motivation could be impacted greater or less due to the way the hybrid model functioned in their school. Moreover, in some schools, students only took their tests on the days they were in school; however, in other schools, students took tests when they were both online and face-to-face. Also, some schools allowed students who participate in a hybrid model of learning to participate in online learning on a day the student should have been face-to-face, while other schools did not give students permission to do this. All of these factors which could have impacted a student's motivation were not controlled for in this study in order to ensure all participants remained anonymous. Furthermore, this study focused on analyzing students' academic motivation, therefore other stresses, such as extracurricular activities, were not controlled for in this study.

Since the participants in this study were predominantly from affluent, suburban areas, they may have easy access to technology. Thus, it cannot be confirmed if the responses from hybrid and online students would be similar or different for participants who struggle with Wi-Fi issues or access to technology. Therefore, these results do not apply to students other than those from affluent, suburban areas.

Future Research

In order to expand on this study, future researchers should further examine testing motivation. Previous literature suggests that academic misconduct may be present when tests are administered online (Tsai, 2016). Therefore, future research should control for academic integrity as this could impact students' motivation.

Future research should also consider looking into permanently implementing an online model of learning for students with certain needs. For example, students with social anxiety or students who cannot attend school physically

could still be at home while also being a part of the classroom. Additionally, there are students who have thrived in an online model of learning and would prefer to continue learning that way. Research should look at taking what has already been learned from this past academic school year and integrating it into the existing school system.

Research should also be conducted to find out how teachers feel about the various learning models and students' motivation. This study focused on a student's perspective of the three models of learning, but for a successful school, it is essential to note what teachers think as well.

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