

Will highschool students after the pandemic want a system of education to be a hybrid of remote learning and in person learning?

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Abstract

As the pandemic persists over a year after the initial outbreak, it is imperative to keep an open mind on the innovations schools have adopted to continue teaching as it may benefit schools when permanently implemented in the correct manner. This study was conducted to open up discussion for the possible adaptation of a blended learning model permanently with a higher ratio of in-person learning or suggest alternative implementations of remote tools to in-person learning. Data was collected through surveying high school students and their opinions on such systems with the idea that experiments with different learning models would be dangerous in the midst of the pandemic and that students should be included in this discussion as they are the ones impacted by this potential change the most. Results indicate that students are in favor of this blended learning model of four days of in-person instruction and one day of remote instruction as the drawbacks of the blended and e-learning model during the pandemic would be solved by such an implementation with the added benefits of more time for students to focus on healthy-activities. Additionally, the study indicates that many students are willing to try various implementations of remote tools to the school system. However, due to a small number of responses (n=66), this study is not extremely significant and may not apply to how a majority of students feel. Instead, this study should be taken as an introduction to the idea of implementing blended learning after the pandemic to attempt reaping the benefits of both e-learning and in-person learning.

Categories: Education, E-learning, Pandemic,

Keywords: Blended Learning, In-person Learning, Remote Tools

Literature Review

Covid-19 spread rapidly, encroaching upon global populations within mere weeks of its discovery in December 2019. First identified in Wuhan China, the virus, according to many scientists, originates in the bodies of various animals including bats, cattles, camels, and cats. A relatively novel disease, Covid-19 is caused by a new coronavirus that has not been seen before. Previous coronavirus cases, MERS-CoV and SARS-CoV also had their origins in bats (Center For Disease Control and Prevention, 2020). In January 2020, it was declared a Public Health Emergency of International Concern and by March 2020, the outbreak was declared a global pandemic by the WHO. This disease was caused by the virus SARS-CoV-2, also known as severe acute respiratory syndrome coronavirus-2 by the International Committee for Taxonomy Viruses because of its genetic relation to the SARS outbreak in 2003. The initial case of the SARS-CoV-2 might have been associated with the Huanan South China Seafood Food Market but the exact source and origin remains unknown. (Santos, 2020) Since the outbreak in February 2020, the disease has spread rapidly around the world. Its relatively high infection rate allowed COVID-19 to spread to many areas in Europe like Italy and Great Britain and later to the United States.

As of the first of May 2020, COVID-19 has infected over 3 million people while killing over 250,000 people. Many political leaders and governments in the world were criticized by their failed attempt to secure the virus. For instance, in the United States many people criticized the government for insufficiently testing its citizens during the early stages of its spread in the nation. While in Japan, many criticized it for not declaring a national emergency sooner as it hoped to host the 2020 Olympic Games that year. Government insufficiency in Hong Kong caused many professional doctors and nurses to go on strikes as a result of their failed precaution in securing the virus. Nonetheless, these factors contributed to the worldwide panic that this ongoing epidemic had on civilians. (Yam, 2020) In June 17, 2020, the European Centre for Disease Prevention and Control identified 8,142,129 cases of COVID-19 and 443,488 reported deaths worldwide since December 31st, 2019. Despite its origin in Asia, the American continent was among the ones with the highest number of cases with 3,987,543 in June. Specifically, with leading countries being the United States with 2,137,731 cases and Brazil with 923,189 as of June 2020. (Santos, 2020)

The disease can be transmitted between humans by respiratory droplets, close contacts with those infected and also by fecal-oral and aerosol contact. Recently, it was shown that airborne transmission is the dominant cause to spread the disease. Therefore, it is revealed that adopting measures such as social distancing and wearing masks cause the airborne spread of the disease to lessen. In this term, wearing a face mask in public and maintaining 6 feet distance can be one of the most effective ways to prevent the spread of the disease. Symptoms and signs associated with the disease are fever, cough, sore throat, headache, and fatigue. However, these symptoms are not limited as loss of taste and smell can also be an effect of Covid-19 in addition to nausea, vomiting or diarrhea. Additionally, pre-existing conditions such as diabetes, cardiovascular and kidney diseases can increase the risk of the infection. (Santos, 2020)

The unprecedented circumstances created by the pandemic have led schools to adopt either a remote model of teaching or a combined model of in-person and remote learning to safely continue teaching students and accommodate lockdown restrictions. Online learning and “most of the terms (online learning, open learning, web-based learning, computer-mediated learning, blended learning, m-learning, for ex.) have in common the ability to use a computer connected to a network, that offers the possibility to learn from anywhere, anytime, in any rhythm, with any means” (Cojocariu et al, 2014). A study done by Singh and Thurman adds that online learning are “learning experiences in synchronous or asynchronous environments using different devices (e.g., mobile phones, laptops, etc.) with internet access. In these environments, students can be anywhere (independent) to learn and interact with instructors and other students” Simply put, it is a tool that allows for flexibility and innovation for students and teachers alike (Singh and Thurman, 2019). E-learning is not at all a new phenomenon; in fact, online tools have been accompanying secondary and tertiary education curriculums for a while (Kopps, 2019; Leszczyński, 2018), but with the outbreak of Covid-19, e-learning is no longer a supplementary addition but a necessity.

Overnight, academic institutions had to adapt to the changing circumstances and modify the curriculum to be carried over online. Carey (2020) argues that the concern is not about whether online learning can provide quality education, rather, it is about how well institutions can adapt swiftly and efficiently. With this pandemic, it has become clear that the education system is susceptible to external dangers (Bozkurt & Sharma, 2020). Adedoyin and Soykan (2020) identify two types of responses to the crisis of the migration of moving online: external-integrated migration and external-assisted migration. The former refers to how institutions and faculty deliver the same instructions and assessment through video meetings, submitting assignments and forum discussions. The latter refers to external programmes and software being used for delivery of instructions, for example, Moodle or Google Classroom. The process of migration can depend on literacy in technology. Those faculty members or students who are natives of the digital age will have an easier time switching the mode of learning (Prensky, 2001). On the other hand, more contemporary studies have shown that a number of people do not have the skills usually associated with the digital age which has led to the belief that the full effects of the rise of technology have not been fully felt and is yet to reveal itself (Bennett et al, 2008; Shariman et al, 2012).

Indeed, since the outbreak, these online-based models have come with a variety of issues, particularly stemming from the hasty transition from regular learning. It has been declared that emergency remote learning during a pandemic is not the same as remote learning (Hodges, 2020). For some scholars, the education provided by these models have proven to be an insufficient replacement for traditional in-person learning due to the difference in the quality of education (Dhawan, 2020). Feldman (2020) examined student assessment methods and recommended the following considerations for districts to implement unbiased and even grading policies: (a) pandemic-related anxiety having negative effect on performance, (b) racial and economic disparity having a negative effect on performance, and (c) majority of instructors have been ill-prepared for delivering high quality instruction remotely. These are three issues that have been

pointed out to be the greatest concern for students. Students were not sufficiently prepared for a hasty transition into an online environment as they face difficulties in balancing work, family and social lives when online learning. They were also found to be ill-prepared for e-learning competencies (Dhawan, 2020; Parkes et al, 2014).

Mental health has also been a concern for university faculty as inevitably the pandemic has personally affected many students (Cao et al, 2020; Liu et al, 2020, Torales et al, 2020).

University faculty has been concerned about student affairs in this respect as significant trauma has implications for identity development for college students (Lederman, 2020; Turk and Vigil, 2020; Shalka, 2020).

On the contrary, some scholars argue the drop in quality can not solely be attributed to the ineffectiveness of e-learning. Their studies show there are benefits of e-learning, including lesson interactivity and collaborative learning (Cojocariu et al., 2014). Advantages of online education can also include the accessibility of time and place unrestricted by geographical location, which is further nuanced by technological tools allowing for lectures to be recorded, archived and shared for future reference amongst students (Mukhter et al, 2020; Muchi-Ferris et al, 2021). In addition, it offers flexibility of instructional pace, and more control over which learning activities are more appropriate to engage in (Alexandra, 1996). Moreover, it simply offers the same instructional material to each student as they do in person (Allen 2003; Bullen, 2003; Piskurich, 2003).

Essentially, with online learning, students don't have to be in a physical classroom anymore to get their education, thus lowering commute time and eliminating geographical restrictions.

The acclimatising of e-learning opens up the possibility of future implementation of online learning as a supplement to in-person learning even after the pandemic is over (Ligouri & Walker, 2020). There is merit in experimenting with different combinations of learning that could be an effective balance by providing benefits of e-learning and in person learning. This leaves the question of how effective a blended learning program would be. Exploring this question through the opinions of students is important to gauge whether blended learning is indeed beneficial and whether it should be implemented to stay after the pandemic. It will also allow for the potential discovery of unforeseen benefits that could have come with remote and blended learning during the pandemic that couldn't have been studied prior without such a large sample size.

In the midst of a pandemic, it would be unsafe to experiment with new learning models consisting of a heavy emphasis on in-person learning. Based on prior and current research, we've seen that remote learning has its drawbacks and benefits. The current implementation of remote learning doesn't necessarily have to be the final iteration of it, nor does it have to go away post-pandemic. In order to bring up a discussion of further implementation of remote-learning, this study aims to open up the discussion to one of the major groups impacted by this potential change: students. The study will attempt to accomplish this by answering what high school students think of remote-learning and whether they will want the implementation of it in some form post-pandemic. This will be done through a survey that will suggest potential implementations of remote-learning post-pandemic.

We hypothesize that out of the various potential implementations that will be proposed throughout the survey, a majority of students will react positively to some of the ideas. For

instance, the idea of attending class remotely when absent would appeal to students by providing them the ability to partake in class in instances they would normally be unable to. They may also find the idea of combining e-learning and in-person learning beneficial because the emphasis on in-person learning would overcome the common problems that come with e-learning, such as the lack of social interaction with peers and teachers (Loades et al., 2020). Additionally, students may prefer not needing to commute on the day of e-learning as it may allow them to spend more time on health-related activities like sleep or exercise (Christian, 2012).

Materials and Methods

In order to conduct this study, we will be making use of anonymous survey responses collected from high school students. First and foremost, we will be establishing how the transition from in-person teaching to remote online learning has changed the quality of education, whether the transition was smooth, and what benefits and challenges have been presented over the course of the past year. Moreover, it is important to determine how e-learning has evolved from its first implementation when the outbreak was declared a pandemic and to determine if there has been adaptation and improvements over the course of the year. After establishing the current learning climate in the educational sphere, the survey will then propose possible implementations of remote learning after the pandemic, such as taking extra classes online or using e-learning when absent for in-person classes .

A survey was deemed to be the most effective method of studying this question as it allows the implementations to be hypothetical, since it would be impractical and unsafe to suggest such implementations during these times. The specific questions asked on the survey are the following:

What Country are you learning in right now? (IE: United States, UK or etc.)

What year of highschool are you in? Freshman, Sophomore, Junior, Senior, Other:

What is your learning situation during the pandemic? How work is assigned? 1: Blended 2: Remote 3: In Person 4: All of the above

How easy is it to learn new materials in class in your current learning situation? 1: Worst 2: Awful 3: Neutral 4: Good 5: Best

How effective is your learning situation during the pandemic in terms of remembering the material? 1: Not effective at all 2: Barely effective 3: Not sure 4: Sort of effective 5: Really effective

How do you feel about your current learning situation during the Covid-19 Pandemic?
Open-Response

What are the benefits you have experienced in this learning situation? Open-Response

What are the challenges that you have experienced in this learning situation? Open-Response

How much do you like in-person learning? 1: Worst 2: Awful 3: Neutral 4: Good 5: Best

How much do you like remote-learning? 1: Worst 2: Awful 3: Neutral 4: Good 5: Best

How was the transition into remote learning when lockdown first started? 1: Worst 2: Awful
3: Neutral 4: Good 5: Excellent

What factors affected your answer to the previous question? Open response

Is online learning more collaborative or less collaborative? Less, The same, More, Other

Since March 2020, have the mechanisms of online learning improved? 1: It's gotten a lot worse
2: It's a bit worse 3: No improvements 4: It's improving a little bit 5: It's improved a lot

If the mechanisms have improved, how? Open-Response

How would you feel about a blended curriculum of both in-person learning and remote learning?
1: It's a horrible idea 2: I don't think that's a good idea 3: I don't know/not sure

4: I'm willing to try it 5: I definitely like the idea and would want it 6: Other (Open Response)

If you had to be absent from school, for whatever reason, would you appreciate the idea of taking
online classes from home instead? Effectively not missing school at all. 1: It's a horrible idea 2: I
don't think that's a good idea 3: I don't know/not sure 4: I'm willing to try it 5: I definitely like
the idea and would want it 6: Other (Open Response)

With the flexibility that remote learning provides, would you take extra classes, subjects or
simply spend more time with teachers if needed? 1: Never 2: Probably Not 3: Unsure 4:
Probably 5: Definitely 6: Other (Open Response)

Did you have more time while learning remotely? 1. Less time 2. A little less time 3. No
difference 4. A little more time 5. More time

Do you think that you were more productive in a remote setting? 1. Not productive at all 2.
Barely Productive 3. The same as in-person 4. A little more productive 5. A lot more productive

Do you think a ratio of 4 days of in-person learning and 1 day in-person would fix or alleviate the challenges you experience with your current learning situation and retain some of the benefits of e-learning? If not, what kind of ratio do you think works? Open-Response

Would you prefer going back to 5 days of in-person learning or would you be willing to try something different? Open-Response

Any additional comments, concerns or suggestions you would like to express about remote learning and the idea of having it incorporated in some way post-pandemic? Open-Response

The aforementioned questions were asked to assess how students felt about their current learning situation to be able to analyze potential benefits of the proposed blended learning program. The questions that collect qualitative data will have their responses in the categories of positive, neutral, or negative, in order to gauge reaction to these proposed implementations (if applicable) or used to supplement and draw parallels to the results in the discussion. Each question that collects quantitative data will be composed into a chart or table with the respective responses and will be used to gauge overall response to these proposed implementations to paint a more holistic picture.

Results

Demographics of responses

What year of high school are you in?

66 responses

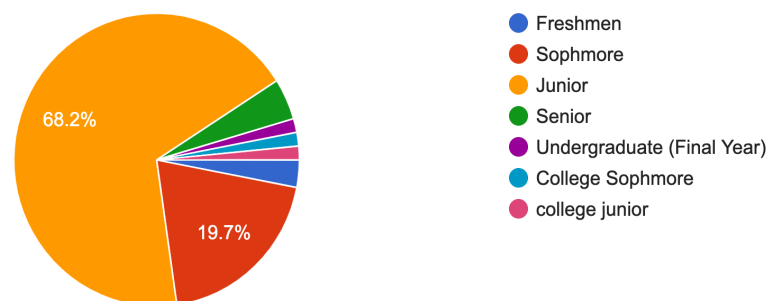


Figure 1: Grade Level Demographic of the Respondents

What Country are you learning in right now?

66 responses

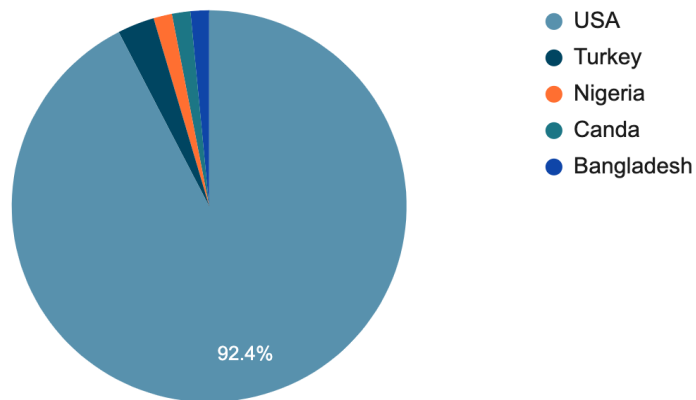


Figure 2: Regional Breakdown of the Respondents

What is your learning situation during the pandemic? How is work assigned?

66 responses

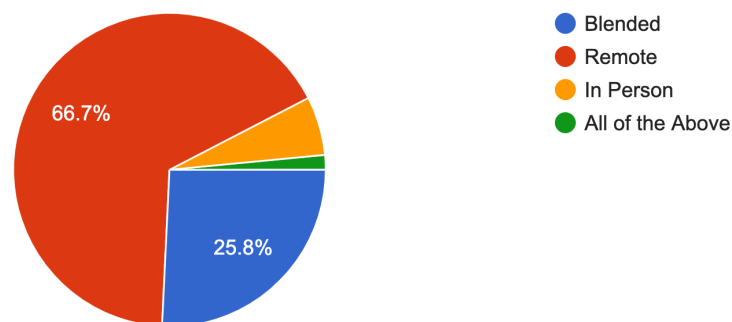


Figure 3: Circumstances of learning of the Respondents

Question and Summary of Qualitative Data

Qualitative data was collected in asking students their personal feelings towards their current modes of learning, the challenges they face and their opinions on the implementation of blended learning post-pandemic.

Q. How do you feel about your current situation during the Covid-19 pandemic?

The common theme in the responses to this question was general neutrality because while it is not an ideal situation it is necessary for the safety of students, thus respondents conclude they have adapted to their learning plan. Some of the answers recognised the privilege of having access to

education despite trying times while other children around the world don't. The glaring issue that majority of respondents pointed out was a lack of motivation:

"It is very difficult to focus and actually learn content"

"It is harder to learn with COVID and harder to remain focused"

"In person is a lot better than online because I can focus more"

"It is alright but the stress and lack of motivation is hindering my ability"

"Stressful, I've been gaining a little of knowledge but I'm still overwhelmed"

"Studying and work feels not mandatory"

These are only some of the several responses pointing out a lack of motivation and inability to retain information. One respondent mentioned having an unhealthy home environment as a contributor to their negative feelings towards their current online learning plan. There were mixed reviews for blended learning; one student explained that they feel as if they are going to two separate schools, one in person and the other online, while another felt that teachers have been doing their best to adapt to both modes.

Overall out of the responses to the survey (n=66), 8 respondents felt positive about their current situation, 29 respondents felt neutral and 29 respondents felt negatively.

What are the benefits you have experienced in this learning situation?

There were three common responses: more free time to indulge in other opportunities, more time to sleep and no need for a commute. Other answers included more independence and the ability to focus on one's own self. Some responses mentioned less social anxiety and better mental health. In reference to academic benefits, there is better time management, better access to notes and the access of learning tools during exams. One respondent also said they have had "higher academic performance holistically."

What are the challenges you have experienced in this learning situation?

Respondents gave varying challenges they have been facing depending on their situation and their environment. Overall, there have been challenges regarding motivation, focus, and less engagement. It is important to note that this lack of motivation, focus and engagement may be due to mental health as some students have reported feelings of loneliness from the lack of social interaction. Some students found issues with distractions at home and not having a boundary between school and home. Many also found technological issues to be a major challenge, such as internet connectivity struggles, having to share electronic devices, audio glitches, websites crashing, and technology breaking. Teachers are also said to struggle with assistance in correcting any audio glitches. One respondent mentioned their home environment as a challenge to their studies.

Q. What factors affected the [transition into remote learning when lockdown first started]?

Respondents gave varying factors that affected how well they transitioned into remote learning when lockdown was first initiated depending on their situation and their environment. Majority of respondents said the transition was “good”, reasoning they had access to technology, good wifi, a good home environment and that their teachers were lenient in aiding students with the transition. Other answers included that their work was asynchronous, that there were assignments and no video calls, and the cancellation of final exams which alleviated stress. The minority of answers who answered that the transition was “excellent” also reasoned it was because teachers were lenient and that they already had access to the technology, wifi and other materials to accommodate e-learning. Many of those who answered “neutral” gave the same reasoning as those who answered “good”. Other negative answers for those who answered “neutral”, “awful” or “worst” mentioned the lack of preparation for the transition, learning to use the technology, not having access to the appropriate platforms, and lack of organisation. There were also personal challenges such as depression, anxiety, personal deaths, and a bad home environment.

Q. If mechanisms have improved [since March 2020], how?

A large majority of respondents report improvements in the way online learning is being conducted, mainly by the implementation of proper structure, better organisation and effective use of apps, and learning platforms. One respondent noted how online learning has effectively become the new norm so there has been a natural adjustment to it; another notes how, given the current state of affairs, 5 day in-person classes won't be returning in the near future which has prompted a more positive attitude and willingness to learn online. Websites and apps have also been noted to improve their service given the circumstances of the pandemic. On the other hand, there are a number of respondents who don't find much change at all.

Q. Do you think a ratio of 4 days of in-person learning and 1 day remote would fix or alleviate the challenges you experience with your current learning situation and retain some of the benefits of e-learning? If not, what kind of ratio do you think works?

Majority of respondents agree that the mode of 4:1 would alleviate the challenges they face while others prompted a 3:2 of in-person and online learning to be a better combination. Indeed, there are some who would prefer to go back to the regular 5 days of in-person learning, thus they find the 4:1 day schedule as a step back. Overall many respondents seemed to respond positively to having a blended learning ratio in the future as 49/66 respondents had either agreed to the alleviation or proposed another ratio of in person to remote learning, while 10/66 respondents were unsure or neutral about it, and 7/66 respondents wanted complete in person learning.

Q. Would you prefer to go back to 5 days of in-person learning or would you be willing to try something different?

The answers were split as 27/66 respondents were open to the idea of trying out a hybrid system in the future, while 32/66 respondents would prefer to go back to the regular 5 day school week pre-covid when it is safe to do so. 8/66 respondents were unsure of whether they would be willing to try something new or were undecided.

Q. Any additional comments, concerns or suggestions you would like to express about remote learning and the idea of having it incorporated in some way post-pandemic?

Majority of respondents did not have any extra comments. Some answers different from what has already been established above:

“I think that in-person learning is generally more conducive, but the breaks and alleviation in schoolwork students experience during remote learning is good to incorporate in some way”

“Concerned it will be used to hold kids to a standard of needing to perform well in school while being very ill and actually needing rest”

“I personally believe that in-person learning is superior to other types of learning, and schools should try to maximize onsite learning as much as possible, as long as it's safe of course.”

“The school system should change. We spend too much time in school and we rarely learn any life necessary skills like filing taxes. Also some online lessons are just lectures that you can teach yourself with YouTube.

Summary of Quantitative Data Concerning Previous and Current Learning Situation

How easy is it to learn new materials in class in your current learning situation?

66 responses

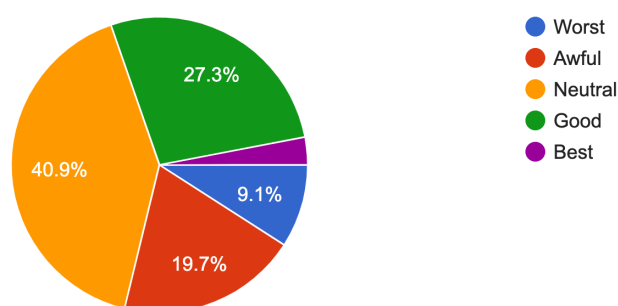


Figure 4: Ease of Learning under current circumstances

How effective is your learning situation during the pandemic in terms of remembering the material?

66 responses

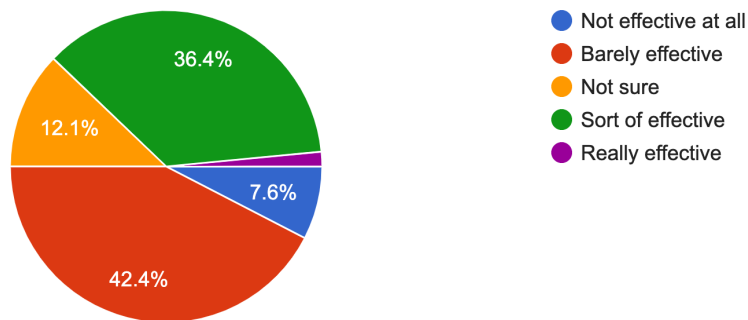


Figure 5: The efficacy of the Respondent's current learning environment for remembering material

How much do you like in-person learning?

66 responses

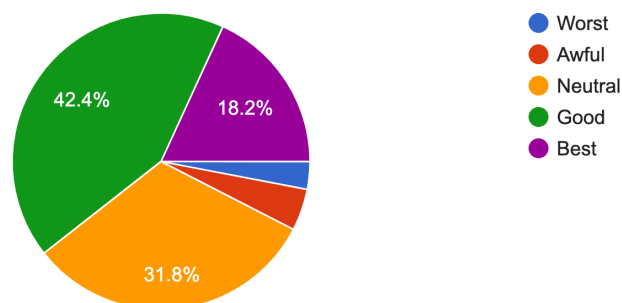


Figure 6: Breakdown of how Respondents feel about in-person learning

How much do you like remote-learning?

66 responses

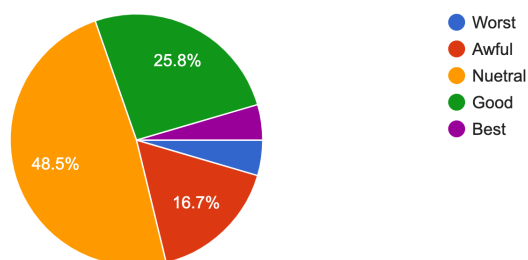


Figure 7: Breakdown of how Respondents feel about remote learning

How was the transition into remote learning when lockdown first started?

66 responses

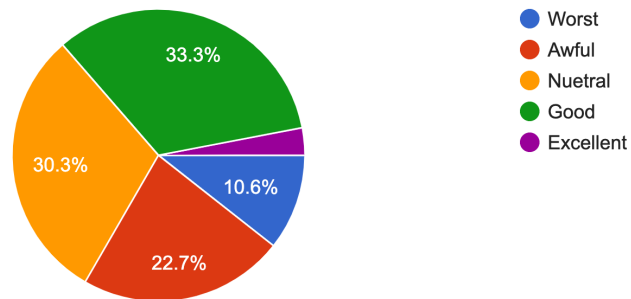


Figure 8: Breakdown of how Respondents felt their school handled the transition to the new remote learning environment

Is online learning more collaborative or less collaborative?

66 responses

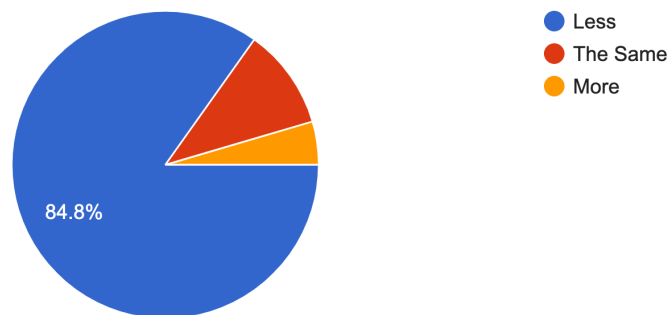


Figure 9: The collaborative difference between online and in-person learning according to the Respondents

Since March 2020, have the mechanisms of online learning improved?

66 responses

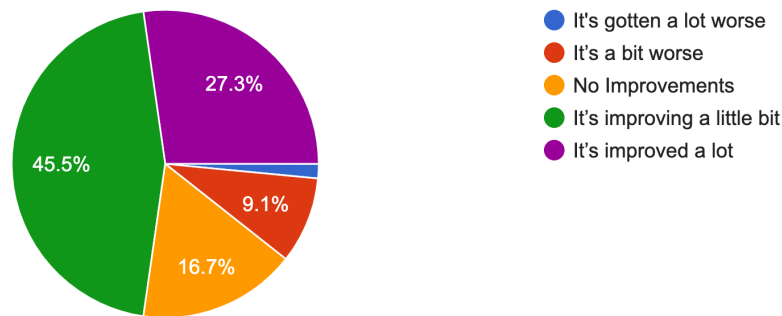


Figure 10: How Respondents feel online learning has improved over the course of the pandemic.

Did you have more free time while learning remotely?

66 responses

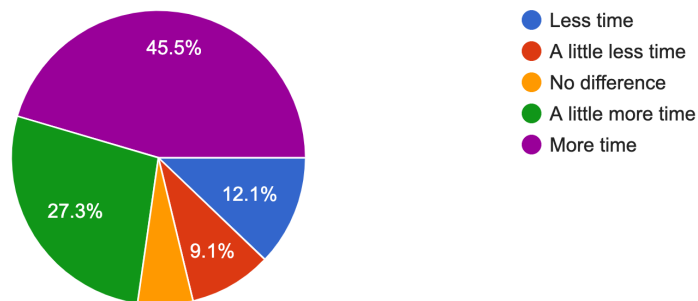


Figure 11: Breakdown of how much free time the Respondents had during remote learning compared to in-person learning

Do you think that you were more productive in a remote setting?
66 responses

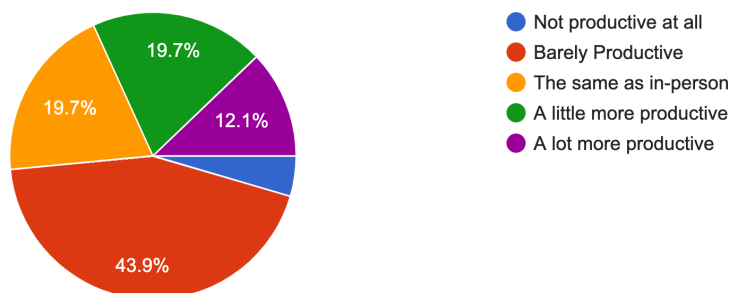
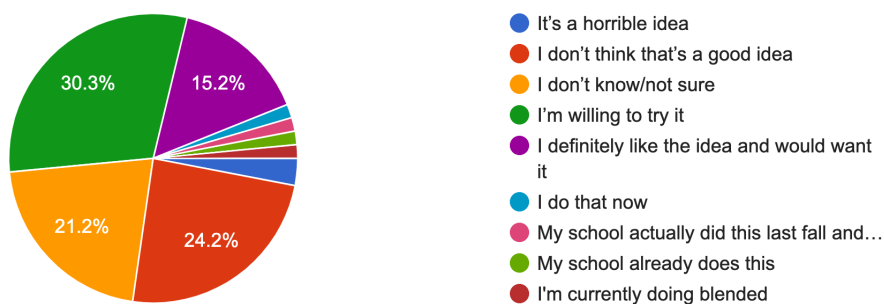


Figure 12: Breakdown of how productive the Respondents had felt during remote learning compared to in-person learning

Summary of Quantitative Data Concerning Potential Future Implementations

How would you feel about a blended curriculum of both in-person learning and remote learning?
66 responses



Breakdown of responses towards a blended curriculum post-pandemic

Figure
13:

If you had to be absent from school, for whatever reason, would you appreciate the idea of taking online classes from home instead? Effectively not missing school at all.

66 responses

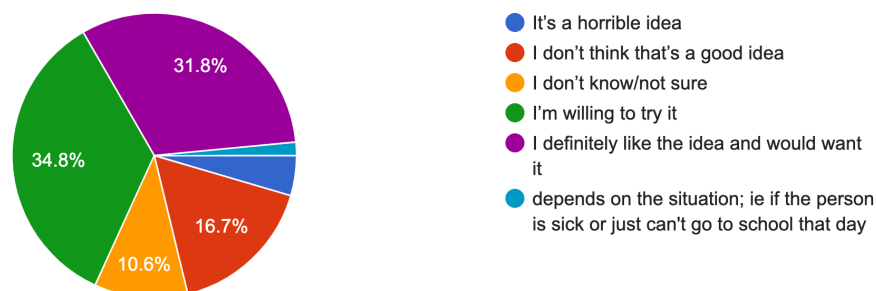


Figure 14: Breakdown of responses towards the potential use of remote learning to avoid absences from school

With the flexibility that remote learning provides, would you take extra classes, subjects or simply spend more time with teachers if needed?

66 responses

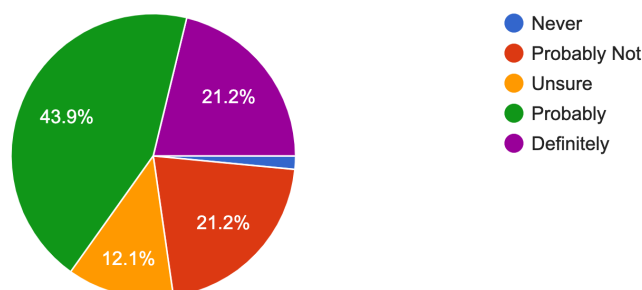


Figure 15: Breakdown of responses towards the potential use of remote learning for extra classes or extra help

Discussion

The main purpose of this study was to propose several possible implementations of remote learning in schools after the pandemic to high school students in order to gauge whether these students would want such implementations as they would be the ones most impacted by it besides teachers. By analyzing the open-response questions by categorizing them into for, against or neutral towards the implementations and/or taking note of patterns and trends within these responses in conjunction with the qualitative data collected, this study provides insight into whether any form of remote learning should be implemented from the students' perspective.

Additionally, this study will add to the body of data on how students feel about the current system and the challenges and benefits they feel they are experiencing in such unprecedented times.

The responses collected concerning the students previous and current learning situation during Covid-19 aligns with and is supported by previous research as the trends of lack of focus, engagement, and social interaction were present in the responses collected (Dhawan, 2020; Addedoyin and Soykan, 2020). Besides these recurring trends, potential drawbacks found with the current remote learning system include but are not limited to harm from an unhealthy home environment, inability to be apart of the school community as extracurricular activities/sports aren't on the same scale as before and teachers being unable to effectively adapt to the new circumstances. However, there were benefits that came with the current learning environment as well: Students had more time to themselves as they didn't have to commute consequently leading to more sleep and time towards healthier habits, and Students were given less work overall by teachers to alleviate some of the stress that came with the pandemic.

As hypothesized, the responses were mostly in favor of some of the potential implementations of remote learning proposed in this study however, it was not an overwhelming majority as previously thought. In fact, the responses to the implementations were nuanced as many potential drawbacks and benefits were listed by the respondents. The respondents in favor of the potential implementations, as expected, had listed the benefit of less commute and extra personal time. This result suggests that some implementation of remote learning post-pandemic is a possibility to explore as students seem willing to try something different to change or supplement the standard 5 days of in-person instruction. But, with such nuanced responses, it is important to take into consideration the drawbacks of such implementations. Some respondents were worried that implementing a permanent hybrid model may be damaging to students who have an unhealthy home environment or don't have the accommodations to attend class in this way. Keeping this in mind, it may be beneficial to make future implementations be up to the student, essentially allowing them to choose a blended learning model or in-person learning in order to address these concerns and the split opinions on the implementations proposed in this study. In addition to concerns of accommodations and home environment, concerns on the amount of workload and pressure that may be placed on students from these implementations were brought up as well. To alleviate or prevent such problems in the future, schools may need to consider giving less work overall in conjunction with these proposed implementations as many respondents noted a benefit of remote learning had been less work and time spent on school.

It is important to note that our study comes with a myriad of limitations that can be further worked upon by others (Ross and Zaidi, 2019). One such limitation is the geographical reach of this survey as most of the responses were heavily located in the U.S. meaning our survey will not be reflecting how students in other countries would feel about such a program. Additionally, since other countries had responded to the online-learning situation differently the proposed benefits and challenges faced by these students and the impact of this blended learning model may not be

accurate. Moreover, remote learning certainly may not work for those who come from disadvantageous backgrounds. In the survey, one respondent consistently reasoned a bad home environment to be the main challenge in the adjustment and implementation of online learning for them. We realise this is a major issue being experienced by students worldwide which should be addressed. Another limitation faced is the nature of this study, conducting a survey and collecting data qualitatively from students may indicate false positives on the benefits of this system. However, it is still important to take student opinion as they and teachers would be the ones who will be impacted by such a change. The final limitation of our survey is the sample size. If we were able to conduct this survey over a longer period of time and obtain a larger sample size of responses the accuracy and implications of our study would increase significantly as we would have more evidence to refute/support our hypothesis.

However despite the limitations within our study, there are several future implications that can stem from our study. One implication is to open the discussion of making blended learning the standard within the education system in place of the five days in-person learning system as the surveys suggest there are potential benefits in doing this as it opens-up more time for the students. Additionally, another implication this study holds is that there may be unseen benefits that can be found in changing the education system as experiments cannot totally account for how the student feels and their opinions on the matter. Thus, implying that the education system can be improved in other ways then the course material or how subjects are taught as we can also change/shift whether students need to go to a physical building to learn or can learn from home.

Other researchers can take the variables in this study and aim to answer the same question more significantly by changing the questionnaire to be able to measure them in a quantitative way as this would allow for statistical analysis to be made. Gathering data on how students feel and experience e-learning and in-person learning opens up schools to adapt and evolve during the pandemic and after. Or other researchers can propose different or more detailed implementations of remote learning tools/methods into the school system.

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References

- Allen, M. (2003). The lessons of e-learning. *Optimize*, December 2003. p. 51
- Bennett, S. , Maton, K. , & Kervin, L. (2008). The ‘digital natives’ debate: A critical review of the evidence. *British Journal of Educational Technology* , 39 (5), 775–786.
<https://doi.org/10.1111/j.1467-8535.2007.00793.x>
- Bozkurt, A. , & Sharma, R. C. (2020). Emergency remote teaching in a time of global crisis due to Corona Virus pandemic. *Asian Journal of Distance Education* , 15 (1), i–iv.
- Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., & Zheng, J. (2020). The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Research*, 287, Article 112934
- Carey, K. (2020). Is everybody ready for the big migration to online college? Actually, no. *The New York Times*. <https://www.nytimes.com>
- Center For Disease Control and Prevention. (2020, September 1). *About Covid-19*. Retrieved March 17, 2021, from
<https://www.cdc.gov/coronavirus/2019-ncov/cdcresponse/about-COVID-19.html>
- Christian T. J. (2012). Trade-offs between commuting time and health-related activities. *Journal of urban health : bulletin of the New York Academy of Medicine*, 89(5), 746–757.
<https://doi.org/10.1007/s11524-012-9678-6>
- Cojocariu V.-M., Lazar I., Nedeff V., Lazar G. (2014). SWOT analysis of e-learning educational services from the perspective of their beneficiaries. *Procedia-Social and Behavioral Sciences*, 116, 1999–2003
- Dhawan S. (2020). Online Learning: A Panacea in the Time of COVID-19 Crisis. *Journal of Educational Technology Systems*, 0047239520934018.
<https://doi.org/10.1177/0047239520934018>
- Feldman, J. (n.d.). *To Grade or Not to Grade?*.
<https://filecabinetdublin.eschoolview.com/6D88CF03-93EE-4E59-B267-B73AA2456ED7/ToGradeorNottoGradearticle.pdf>

Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020, March 27). The difference between emergency remote teaching and online learning. *EDUCAUSE Review*.

Kopp, M. , Gröblinger, O. , & Adams, S. (2019, March 11–13). *Five common assumptions that prevent digital transformation at higher education institutions. INTED2019 Proceedings* (pp. 1448–1457). <https://doi.org/10.21125/inted.2019>

Leszczyński, P. , Charuta, A. , Łaziuk, B. , Gałązkowski, R. , Wejnarski, A. , Roszak, M. , & Kołodziejczak, B. (2018). Multimedia and interactivity in distance learning of resuscitation guidelines: A randomised controlled trial. *Interactive Learning Environments* , 26 (2), 151–162. <https://doi.org/10.1080/10494820.2017.1337035>

Liguori E. W., Winkler C. (2020). From offline to online: Challenges and opportunities for entrepreneurship education following the COVID-19 pandemic. *Entrepreneurship Education and Pedagogy* 10.1177/2515127420916738

Liu, C. H., Zhang, E., Wong, G. T. F., Hyun, S., & Hahm, H. C. (2020). Factors associated with depression, anxiety, and PTSD symptomatology during the COVID-19 pandemic: Clinical implications for US young adult mental health. *Psychiatry Research*, 290, Article 113172. <https://doi.org/10.1016/j.psychres.2020.113172>

Loades, M. E., Chatburn, E., Higson-Sweeney, N., Reynolds, S., Shafran, R., Brigden, A., Linney, C., McManus, M. N., Borwick, C., & Crawley, E. (2020). Rapid Systematic Review: The Impact of Social Isolation and Loneliness on the Mental Health of Children and Adolescents in the Context of COVID-19. *Journal of the American Academy of Child and Adolescent Psychiatry*, 59(11), 1218–1239.e3. <https://doi.org/10.1016/j.jaac.2020.05.009>

Mucci-Ferris, M., Grabsch, D.K., & Bobo, A. (2021). Positives, Negatives, and Opportunities Arising in the Undergraduate Experience During the COVID-19 Pandemic. *Journal of College Student Development* 62(2), 203-218. doi:10.1353/csd.2021.0017.

Mukhtar K, Javed K, Arooj M, Sethi A. Advantages, Limitations and Recommendations for online learning during COVID-19 pandemic era. *Pak J Med Sci*. 2020;36(COVID19-S4):S27-S31. doi:10.12669/pjms.36.COVID19-S4.2785

Olasile Babatunde Adedoyin & Emrah Soykan (2020) Covid-19 pandemic and online learning: the challenges and opportunities, *Interactive Learning Environments*, DOI: [10.1080/10494820.2020.1813180](https://doi.org/10.1080/10494820.2020.1813180)

- Parkes, M., Stein, S., Reading, C. (2014). Student preparedness for university e-learning environments. *The Internet and Higher Education*, 25, 1–10.
<https://doi.org/10.1016/j.iheduc.2014.10.002>
- Piskurich, G. M.(2003). Preparing learners for elearning. Jossey-Bass/Pfeiffer, p.73.
- Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon* , 9 (5),
<https://doi.org/10.1108/10748120110424816>
- Ross, P. T., & Bibler Zaidi, N. L. (2019). Limited by our limitations. *Perspectives on medical education*, 8(4), 261–264. <https://doi.org/10.1007/s40037-019-00530-x>
- Santos, W. G. d. (2020, July 3). *Natural history of COVID-19 and current knowledge on treatment therapeutic options*. Natural history of COVID-19 and current knowledge on treatment therapeutic options. Retrieved March 16, 2021, from
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7332915/>
- Shalka, T. (2020). (Re)membering the body: Identity development and college student trauma. *Journal of College Student Development*, 61(4), 456-473. <https://doi.org/10.1353/csd.2020.0051>
- Shariman, T. P. N. T. , Razak, N. A. , & Noor, N. F. M. (2012). Digital literacy competence for academic needs: An analysis of Malaysian students in three universities. *Procedia-Social and Behavioral Sciences* , 69 (1), 1489–1496. <https://doi.org/10.1016/j.sbspro.2012.12.090>
- Singh, V., Thurman, A. (2019). How many ways can we define online learning? A systematic literature review of definitions of online learning (1988-2018). *American Journal of Distance Education*, 33(4), 289–306.
- Torales, J., O'Higgins, M., Castaldelli-Maia, J. M., & Ventriglio, A. (2020). The outbreak of COVID-19 coronavirus and its impact on global mental health. *International Journal of Social Psychiatry*, 66(4), 317-320. <https://doi.org/10.1177/0020764020915212>
- Yam, K. C. (2020, September 24). *The rise of COVID-19 cases is associated with support for world leaders*. The rise of COVID-19 cases is associated with support for world leaders. Retrieved March 16, 2021, from <https://www.pnas.org/content/117/41/25429>