Education in the Age of COVID-19

Harvard College Consulting Group

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2. Executive Summary

The COVID-19 pandemic forced **99% of K-12 students** (55.1 million students) and **97% of higher education students** (22.3 million students) across the country to attend some form of online schooling for the final 2-3 months of the 2019-2020 academic year.

TRANSPARENT COMMUNICATIONS

Administrators, teachers, and families should deliver regular and structured updates to one another through multiple channels on the educational impact of the pandemic. The closure of physical educational spaces led to a breakdown in communication that exacerbated existing uncertainties for school leaders, teachers, students, and parents. Educational stakeholders report the most satisfaction with school systems that established reliable communication channels including email and social media updates, virtual town halls, TV announcements, and home visits to ensure widespread access to information regardless of device and Internet accessibility.

79%

Percentage of students who felt **dissatisfied with their school administration's communication** on crisis planning

SUPPORT SYSTEMS

44%

Percentage of teachers who felt **inadequately supported** by administration in **using classroom technologies**

Educators and students need targeted digital training to succeed in online and hybrid learning models. Learning and teaching from home revealed technological weaknesses in both teacher and student skill sets that caused substantial delays in curriculum progress. Although most districts took immediate action to provide internet access, teachers and students received little sustained guidance in the use of technology as a teaching and learning tool. Administrators should equip teachers with resources such as technology guides, professional development groups, and a centralized IT help line so they can better adapt and structure digital curricula for students.

Administrators should prioritize both teacher & student mental health to maximize engagement inside and outside of the classroom. Teachers reported a need for additional mental health support, such as private forums or messaging groups to discuss challenges with other teachers. In addition, students and parents reported a desire for wellness initiatives to limit screen time and reduce social isolation. Some initiatives included structured exercise time, the creation of social pods, group projects, and assignments that require going outside.

77%

Percentage of students who **did not receive or were not aware of** additional school-provided **health resources**

88%

Percentage of teachers who **did not receive or were not aware of** additional school-provided **health resources**

INSTRUCTIONAL MODIFICATIONS

"Don't take this as a problem, **take this as an opportunity**... you are given a **whole new canvas** to design a new way of teaching."

- Dr. Francis Kong, lecturer at UC Berkeley

Educators should alter their instructional methods to maximize student engagement in online learning while also finding new ways to assess student progress. Teachers realized that online education warrants a very different approach to teaching compared to in-person lessons. They reported success in increasing student engagement with shorter lessons, active listening exercises, and hands-on activities. In order to assess student progress accurately and honestly, teachers turned to open-book assessments requiring deeper understanding and performance and/or design-based assignments such as presentations and hands-on projects.

3. Methodologies

This paper leverages personal experiences from three key groups of education stakeholders – [1.] administrators, [2.] teachers, and [3.] students and parents – to better understand how remote learning has affected the education sector as a whole. In total, the team collected survey responses from **247** **students** and **53** **teachers** across the United States and Canada and conducted **30** **interviews** with parents, teachers, and administrators. HCCG's primary research, coupled with an extensive review of previously published perspectives from The New York Times, Teach for America, US News, and others on COVID-19's impact on education aims to prepare all education stakeholders for the upcoming 2020-21 school year. Exhibits 1-3 depict the demographic diversity of surveyed individuals.

STUDENTS

Distribution of Grade of Surveyed Students

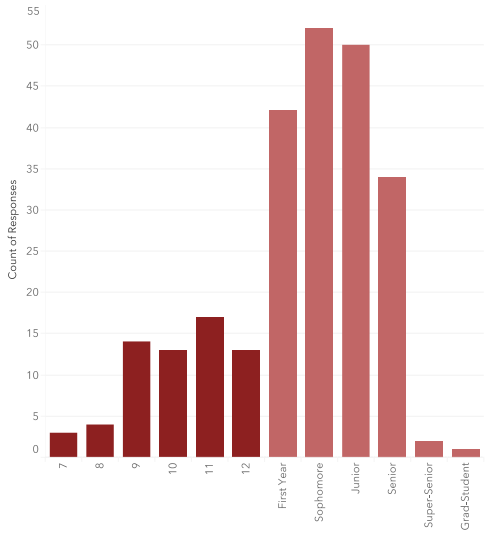


Exhibit 4: (n=247) Distribution of grade of surveyed students

TEACHERS

Distribution of Grades of Surveyed Teachers

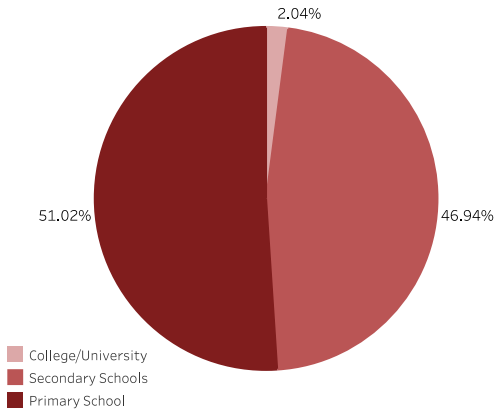


Exhibit 3: (n=53) Distribution of grades taught by teachers surveyed

School Effectiveness by State

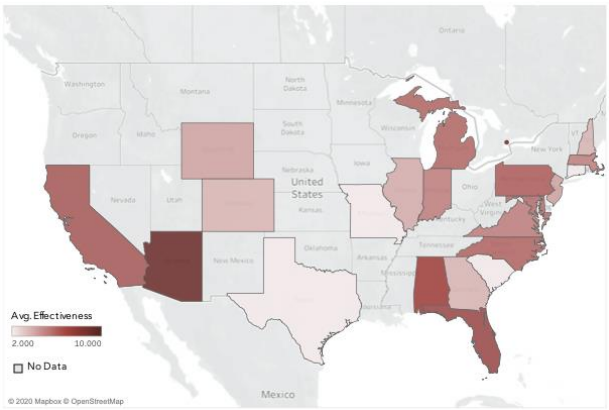


Exhibit 2: (n=247) Geographic distribution of the effectiveness of schools

Learning Gap Concerns by State

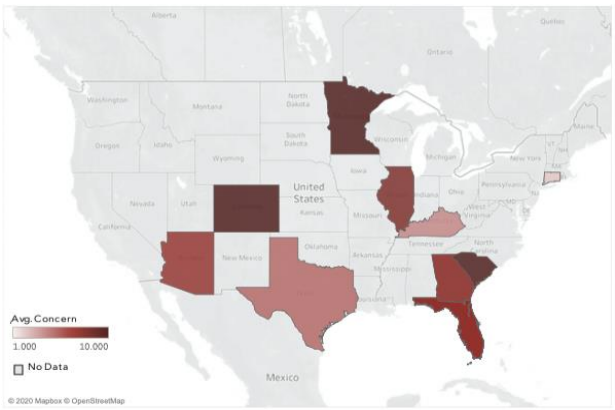


Exhibit 1: (n=53) Geographic distribution on the concern of gaps in academic learning

4. Introduction

In the United States and Canada, COVID-19 led to the widespread shutdown of in-person schooling beginning in March 2020. Schools undertook an unprecedented effort to transition instruction to online/remote models at all educational levels with varying degrees of success. This report examines the challenges faced by administrators, teachers, parents, and students to understand the perspectives of each of these stakeholders in education. Understanding the concerns of each of these groups will better inform continuously evolving educational practices and policies for the upcoming school year.

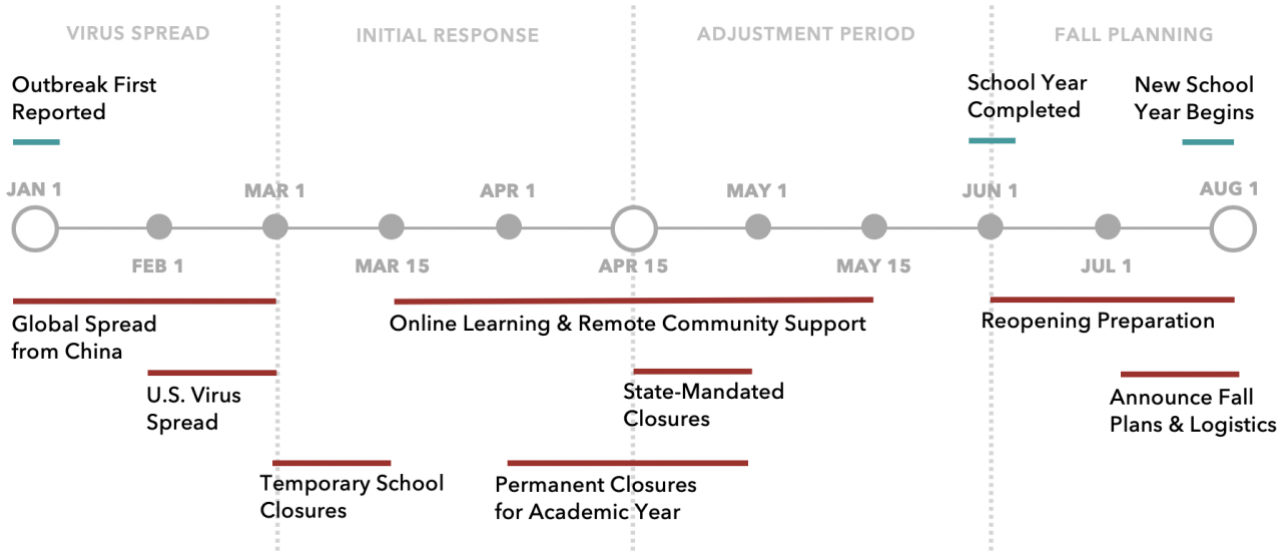


Exhibit 5: A general timeline of events of the impact of COVID-19 on education.

Though specific decisions about the format of the coming year will differ across regions and educational levels, the various models under consideration contain common elements. The CDC has advised that "the more people a student or staff member interacts with, and the longer that interaction, the higher the risk of COVID-19 spread." Consequently, school systems around the country, including colleges and universities, are making decisions about the extent to which various mitigation strategies will be implemented. Remote or online learning is a feature of many models being considered. Furthermore, the continually evolving severity of the pandemic makes it clear that even schools holding in-person instruction need to be prepared to shift to online models.

5. Administrators

In March of 2020, school administrators around the nation were forced to make decisions that would significantly impact teachers, parents, and students. Many factors relating to the novel coronavirus were largely unknown, including the severity of illness for different populations, the ease and manner with which the virus could spread, and the extent of community spread. The need to make quick decisions with limited information led to challenges in communication, allocation of resources, and support for all members of the school community.

5.1 Communication and Transparency

The rapid and drastic action taken by school leadership to protect their communities from COVID-19 exposed particular weaknesses in communication.

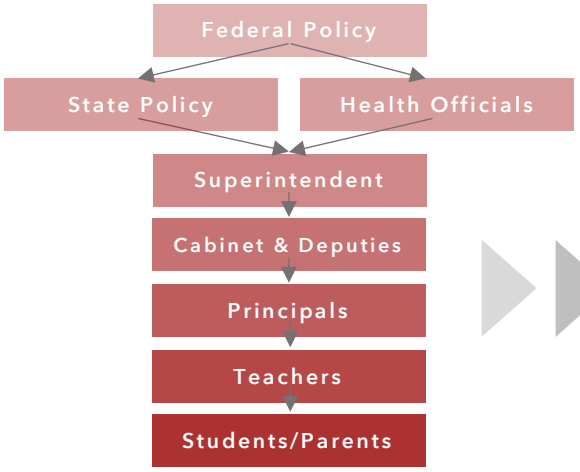


Exhibit 7: A depiction of the typical organizational structure of a school district.

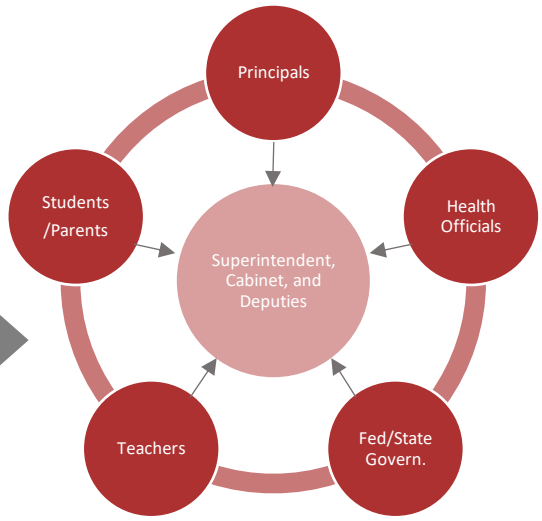


Exhibit 6: The optimal decision-making structure wherein district leaders take ideas and opinions from all other stakeholders.

Foregoing top-down decision-making. Efforts to include school-level administration in making decisions can give district-level administrators a broader range of perspectives, while also keeping schools up to date on options being discussed. As Professor Deborah Jewell-Sherman at Harvard's Graduate School of Education advised, "I hope that school district administrators will keep principals in the planning process as they're thinking about the restart of school so that it's not a top-down decision." [1] Exhibits 6 and 7 above depict a typical school board's organizational structure versus how decisions should be made during a crisis.[2,3]

The wait for top-down communication negatively impacted pandemic planning in the Spring of 2020. This was highlighted in February when the head of the American Federation of Teachers (AFT) and American Association of School Administrators (AASA) called on the Trump

1 Harvard Graduate School of Education
2 Walpole Public Schools
3 Miami-Dade Public Schools

administration to provide guidance on how teaching professionals should respond to the threat of COVID-19.[4] As information was passed down from various chains of commands, there were breakdowns in communication to some schools. For instance, in two neighboring California school districts, one school was able to reopen after 2 weeks whereas the other school, however, took 4 weeks to reopen due to a failure in transparency.[5] Organizing forums for both regular and impromptu meetings with larger administrative teams, faculty, or students can serve to efficiently include many voices in these time-sensitive decision-making processes.

Surveyed students strongly voiced their desire to see student feedback incorporated into decision-making, which proved to be a productive resource for administrators. A Chancellor of a large state community college shared how understanding that students intended to continue living in their off-campus apartments regardless of the school's reopening decisions, shaped the college's eventual fall plans.[5]

Providing ample response time for major actions. Providing key players like district leaders and administrators ample time to prepare for drastic changes or actions make a difference in the outcome for educational stakeholders. District-level leaders should especially communicate adequately with administrative teams to avoid blindsiding those actively working in schools.

EXAMPLES

HARMS

These insufficient response times had significant implications for the rest of the school year. For instance, a San José elementary school principal was given only thirty minutes of prior notice from the district's leadership before she was required to completely shut down her school.[5] As a result, students and teachers went without workbooks, teaching resources, and distributable technologies like Chromebooks that had been left behind at the school when they transitioned online.

BENEFITS

Schools given more prior notice were more successful in the transition to virtual learning. When there was the looming possibility of distance learning, the Miami-Dade County public school district prepared 200,000 laptops and tablets ahead of the decision to close schools.[6] Districts that already had online learning systems in place began to devise virtual classrooms, while others that did not yet have those systems started to develop lesson plans that could be emailed or mailed to students. By taking these proactive steps before the "new normal" hit, districts were able to smooth the transition into remote learning.

4 Education Week

5 HCCG's June 2020 Education Interviews

6 US News

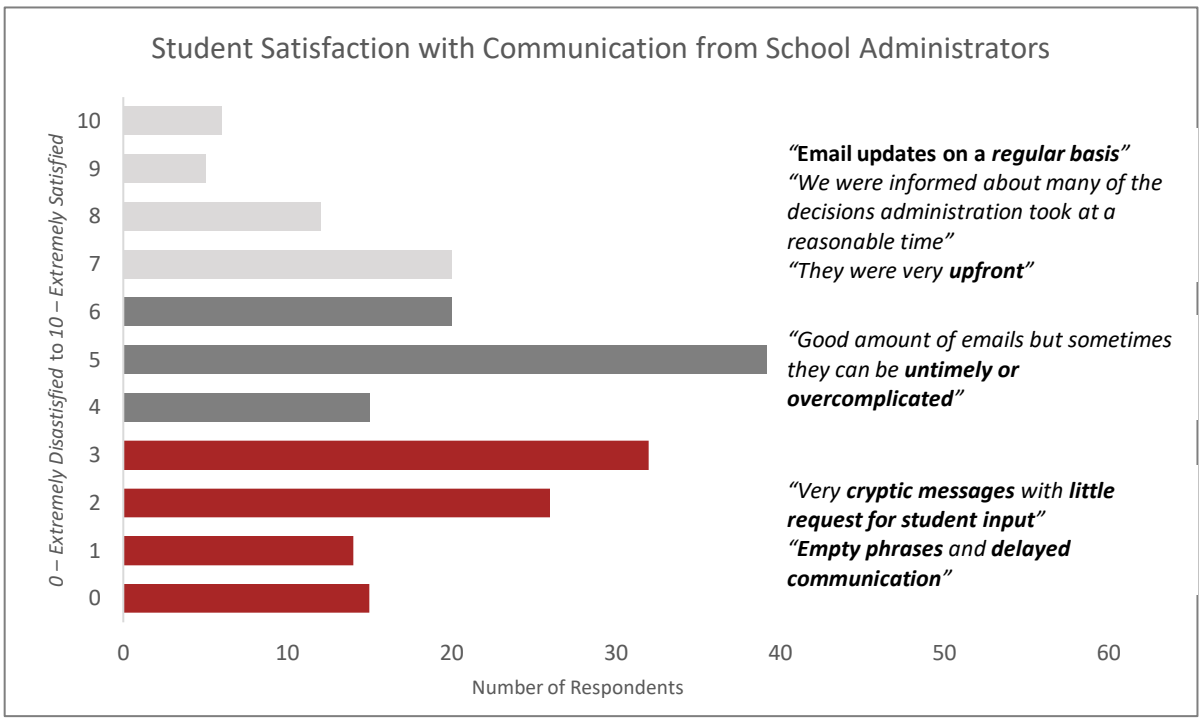


Exhibit 8: (n=243) Student satisfaction with school communication with corresponding survey responses. (Source: HCCG Primary Research)

Consistently reporting transparent updates. As the COVID-19 situation evolved in the Spring, school administrators depended on effective communication with students. Exhibit 8 demonstrates the most common statements from surveyed students of different satisfaction levels, and regardless of their stance, consistent and clear communication was emphasized. Moving forward, regular updates to illustrate the school's present status, possibilities, and considerations should be prioritized. University-level students, in particular, have asked for more transparency from their administrations and planning committees.[7]

Students were most satisfied with the schools that sent out timely updates, kept information clear and concise, and built dedicated COVID-19 webpages.[7] One student from the University of Pennsylvania expressed his appreciation for his school's website outlining fall plans and potential restrictions for students who return to campus.[7] For effective information distribution in a low-income district, a high school principal in Mississippi actively diversified school communication methods with a mix of community-wide town halls, online parent surveys, and one-on-one meetings.[8] A California high school amplified their communication efforts by repurposing non-teaching employees whose clerical roles in their offices were no longer possible remotely to reach out to families instead.[8]

Once students were not in the building, many became unreachable; the pandemic thus revealed to administrators the vital importance of maintaining updated databases of family contact information. Knowing how to reach families is the first step in facilitating transparent communication on potential courses of action so that stakeholders have ample time to be logistically and mentally prepared.

[7] HCCG's June 2020 Education Focus Groups

[8] HCCG's June 2020 Education Interviews

5.2 Allocation of Resources

All students rely on the in-person resources that schools provide to facilitate learning. These resources include teachers, textbooks, technologies, and the general classroom atmosphere. A significant obstacle posed to schools is the equitable distribution of necessary resources to all students who need them.

Accurately assessing student needs. Remote conditions can exacerbate inequities that already exist between students. A primary inequity stems from socioeconomic class, and a Pew Research Center survey found that **41%** of **lower-income parents** said they were very concerned about their children falling behind due to school disruptions caused by COVID-19 compared to only **17%** of **upper-income parents**.[9]

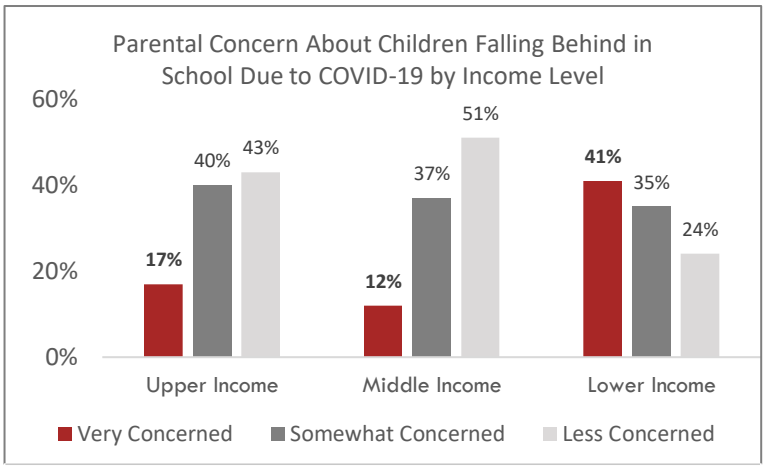


Exhibit 10: (n = 4917) Parental concern about children falling behind due to COVID-19 closures by income level. (Source: Pew Research Center)

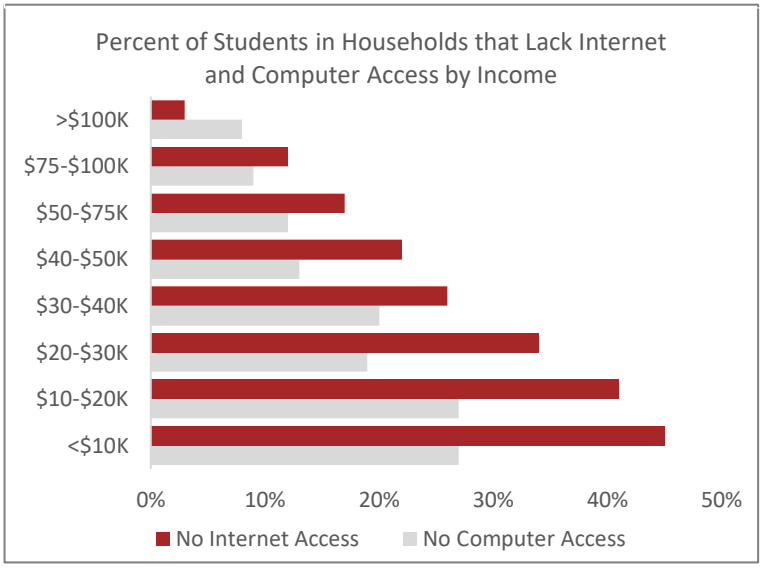


Exhibit 9: Percent of students in households lacking internet and computer access in 2017. (Source: National Center for Education Statistics)

One factor leading to the initially slow distribution of resources to families in need was that administrators, as a California high school principal noted, were not "being honest" with themselves about the inequity in access to not only devices but also internet, at their schools.[10] More than nine million children lack internet access for online learning in the U.S, and as shown in Exhibit 10, access to internet varies by income level.[11] Surveys to determine specific packages of most needed resources, such as devices, functional hotspots, and technology guides, should be a comprehensive and streamlined process to target resource allocation in the future.

With the additional time available to plan for the impact of COVID-19 on the 2020-21 school year, administrators should now have a more accurate assessment of resource needs to plan for deliveries. Administrators can also consider looking towards more accessible channels to convey lectures to students instead of solely relying on platforms that require devices like laptops,

9 Pew Research Center
10 HCCG's June 2020 Education Interviews
11 USA Facts

phones, and internet. For instance, broadcasting lessons over the radio and TV channels was a successful method in China that connected many students who were unable to interact with their schools because of device shortages.[12] Some districts in the U.S., such as Miami-Dade County, piloted television-based instruction in the Spring; collaboration across districts in these efforts could also prove to be fruitful.

Bolstering special education programs. Parents of children with learning disabilities expressed their disappointment in the handling of independent learning plans for their students.[14] Special education teachers, who educate students with sensory impairments, learning disabilities, and more, face unique challenges. While these teachers have the best understanding of their students' needs, administrators can support these teachers by gathering information from schools across the district on the best online tools and platforms available for their students. Administrators can encourage special education teachers to join relevant online communities to find crowdsourced tips as well. For instance, SoundingBoard is a free mobile augmentative and alternative communication (AAC) app designed for children who have limited to no ability to speak, and Tales2Go is an audiobook service that helps struggling readers with stories and books for all ages.[13] Lastly, special education teachers can take advantage of built-in digital modifications of most devices, such as the ability to convert text files and web pages into audio.

5.3 Support for Students and Faculty

At the heart of administrations' operational endeavors and instructional leadership is their commitment to supporting all members of the school community.

Facilitating community building. Supporting community life is especially valuable in remote situations. As Troy Flint, the Senior Director of Communications for the California School Boards Association stated, "school is an escape for a student of extreme poverty and in an abusive household, as teachers are confidants."[14] Flint highlighted the importance of school-facilitated engagement with students beyond the classroom. This could involve encouraging student extracurriculars or individual teacher mentorship. For example, one administrator suggested reallocating resources such as climate-controlled busses and art teachers or volunteers to set up mini-lessons and classes across the city in social-distanced settings.[14] Other extracurriculars such as remote research or internship programs, at-home workout sessions, or journalism activities, would create creative, safe, and pragmatic communities from home.

> "School is an escape for a student of extreme poverty or in an abusive household, as teachers are confidants."

12 The Lancet
13 Edutopia.
14 HCCG's June 2020 Education Interviews

PRACTICE	IMPACT
A high school in Colorado hosted **morning assemblies** where one member of the community would present on a current or historical event or person. The school also organized **Zoom sessions** that were **purely social** where student could do artwork or play board games together.[16]	A dean and teacher of the Colorado school spoke highly of how these programs engaged the whole community and **promoted student interaction**.[14] Other administrators interviewed also endorsed daily **community circles** and teacher office hours dedicated to community health.

Supporting teacher technological acclimatization. In some schools, minimal training was provided to teachers for remote learning. In one Miami school, teachers were told to use Microsoft Teams but were given no training, leaving one teacher to ask for help from friends and family on Facebook.[14] In other cases, teachers were allowed to use the system with which they were most comfortable, but this required students to juggle different online learning tools for each class; a handful of surveyed students named 7 different online platforms used for their various Spring courses including platforms with very similar features such as Zoom and Google Meet.[15] Administrators can prioritize organizing robust professional development to better support teachers transitioning to online platforms and ensure consistency. In some cases, paying teachers who are more tech-savvy to help their colleagues could help the schools as a whole navigate the technological learning curve.

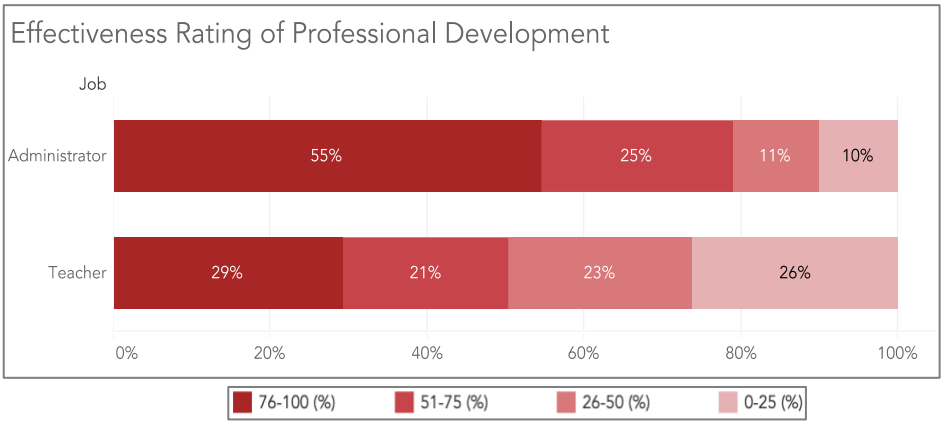


Exhibit 11: (n=2,137) Survey conducted pre-COVID, measured effectiveness using the question "On a scale of 0 (terrible) to 100 (perfect), please provide your personal rating of how effective the professional development was for teachers for the selected curriculum. (Source: Bay View Analytics)

Supporting teacher wellbeing. Administrators can ensure that teachers have the support they need by fostering an environment that encourages teachers to raise any issues they may have. Several teachers noted that having weekly Zoom meetings with administrators and other faculty members was "absolutely critical" for teachers to feel comfortable and supported.[16] One eighth-grade Spanish teacher said she especially appreciated administrators "coming to help, rather than questioning," whenever she and her colleagues reached out.[17]

[15] HCCG's June 2020 Education Surveys

[16] HCCG's June 2020 Education Interviews

Many teachers acknowledged that while the school proactively acknowledged the toll taken on students' mental health, teachers were also feeling anxious and stressed, especially at the beginning of the adjustment period.[17] The mathematics department head at a California high school admitted that the first week of remote learning was "horrible" because he "didn't know how to do [his] job" and felt "pulled in all directions."[17] A key differentiating factor for teachers who described a positive experience with the transition to remote teaching was their administration's willingness to listen openly and both provide and receive feedback.[17]

> "I appreciated experiences of my school's administrators coming to help, rather than questioning, whenever teachers would reach out for support."

[17] HCCG's June 2020 Education Interviews

How can schools best support their teachers remotely?

Teachers during COVID-19 ▶ Key takeaways

Teachers' most immediate challenge for remote learning was **student attendance**, then **in-class engagement**

Teachers want to receive the same **concern & support for mental health** provided to students

Professional development initiatives & resources are crucial for sustainable remote teaching

Teachers during COVID-19 at a glance

95%

Median percentage of students regularly attending **in-person** classes

Impact on student attendance

72%

Median percentage of students regularly attending **online** classes

Impact of remote learning on teachers' mental health

88%

felt that school-provided **mental health services for teachers were inadequate**

84%

reported that **family obligations** hindered their teaching quality

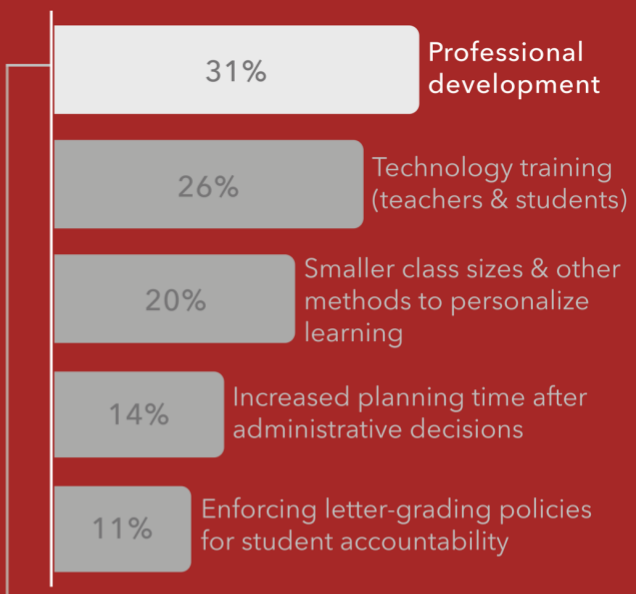
SOLUTION: Offering more **flexible scheduling** decisions & **paid leave** plans

SOLUTION: Providing direct **feedback channels & remote teaching** options for the fall

3/10

average **comfort level returning** to in-person classrooms in the fall

From teachers: what should educators prioritize to improve remote learning?



Professional development initiatives

Paid, educator-led training for re-designing curriculums & grading policies

Subject-specific & specialized technology trainings for different subjects & class sizes

6. Teachers

As school buildings began closing, teachers were tasked with finding new methods to communicate with students, maintain student engagement with coursework, and guide their students in the transition to online methods while learning new technology themselves.

6.1 Communication with Students and Parents

Virtual learning has brought a different dynamic to teacher-student and teacher-parent relationships. Without the ability to make in-person connections, teachers had to find other ways to communicate with families.

Establishing open and reliable communication channels. All interviewed teachers reported a challenge in communicating with their students and parents. For instance, one recurring issue among grade-school teachers was their inability to contact parents to discuss student progress.[18] Within the Cleveland School District of 38,000 students, teachers were initially **only able to reach 60%** of the families they had been able to reach in-person to schedule parent-teacher conferences and ensure continuity of learning.[19] Having a reliable method of communication with students when they are not physically in school is vital to nurturing their academic growth.

PRACTICE	IMPACT
One Bay Area teacher found a creative way to engage more of his class after just one student attended his office hours over the course of two weeks. He decided to provide "**enrichment learning**," where he taught beyond the course curriculum to offset some of the reduced learning due to the constrained environment.[17]	These sessions were "**extremely liberating** for both [him] and [his] students;" without curriculum boundaries, "students learned for the sake of learning." Having more time with students, he would also fulfill a role "**beyond just a teacher**" and check in with individual students to support them emotionally.[17]

Developing a manageable communication routine. Dedicated communication can be difficult and time consuming for teachers. A few teachers reported that student and parent questions were so numerous they were impossible to manage.[17] One California high school teacher highlighted the effectiveness of using Google Classroom to maintain communication with her students. Instead of having to respond to 100+ students individually, she turned towards posting a morning message and hosting daily office hours.[17] Structured weekly "office hours" with students and parents outside of normal class hours to maintain personalized engagement were successful in many cases.

[18] HCCG's June 2020 Education Interviews

[19] The New York Times

6.2 Student Engagement with Coursework

Teachers at all levels of education have found it significantly more difficult to encourage students to attend classes, complete assignments, and stay engaged with course material as schools have transitioned to remote learning.[20]

Grappling with reduced student attendance. Online school decreases attendance rates across the board, which was noted as a significant problem by almost all teachers interviewed. In Los Angeles County, the country's second-largest district, about **13%** of **high school students** had no online contact with teachers with only **2/3** of **students** regularly participating in online learning.[21]

Teachers are limited in their ability to improve student attendance. However, one potential solution could involve a flipped-classroom approach. Asynchronous learning allows teachers to introduce students to the class material through pre-recorded videos, thus saving class time for discussions. Via asynchronous learning, the pedagogy introduces course materials outside of class with in-class time dedicated to individualized teaching on relevant questions and applications. Additionally, flipped classrooms often use pre-recorded videos for homework materials. In an HCCG-conducted focus group, students indicated a preference for more "produced" educational material. With remote education, video tutorials can be effective as shorter, more digestible lessons are accessible to students at any time, regardless of their availability or time zone. In live classes, teachers can then address specific problems or material applications more effectively.

> "Online education is a whole new canvas to design a new way of teaching."

Maintaining the attention of students. The attention span of a typical 10-year-old is only 20 to 30 minutes.[22] More opportunities for hands-on learning could help capture and maintain engagement. Online resources for active learning, such as BrainPop's interactive platforms and Enchanted Learning worksheets, can stimulate students more than traditional worksheets. One elementary school principal also noted that her grade school teachers found success with sending videos of themselves for the students to follow along with.[23] As the students participated in different activities, they would also make short recordings of themselves to send back. In general, trying different creative solutions can help keep young students engaged.

YOUNGER STUDENTS

Teachers found that on platforms like Zoom, where a chat box accompanies the video conferencing feature, they could increase lecture engagement through more efficient dialogue in the chat.[23] Numerous teachers at all levels also indicated that asking questions that require student responses was vital in maintaining attention during remote learning. One Massachusetts assistant principal echoed the opinion of many teachers when he said teachers are not just educators, they need to provide "edu-tainment."[27] The teachers who most enjoyed the shift to remote

OLDER STUDENTS

20 HCCG's June 2020 Education Surveys
21 The New York Times
22 Brain Balance Achievement Centers.
23 HCCG's June 2020 Education Interviews

learning saw it as an opportunity. A lecturer at the University of California, Berkeley, explained that he views the online environment as "a whole new canvas to design a new way of teaching."[26]

Condensing curriculums for reduced class time. As a result of online learning, an estimated **48%** of **higher education faculty** reduced the quantity of work expected from students.[24] More than **2/3** of **surveyed students** experienced notable reductions in schoolwork.[25] These material abridgments not only have immediate consequences, but gaps in knowledge must also be addressed in future lessons.

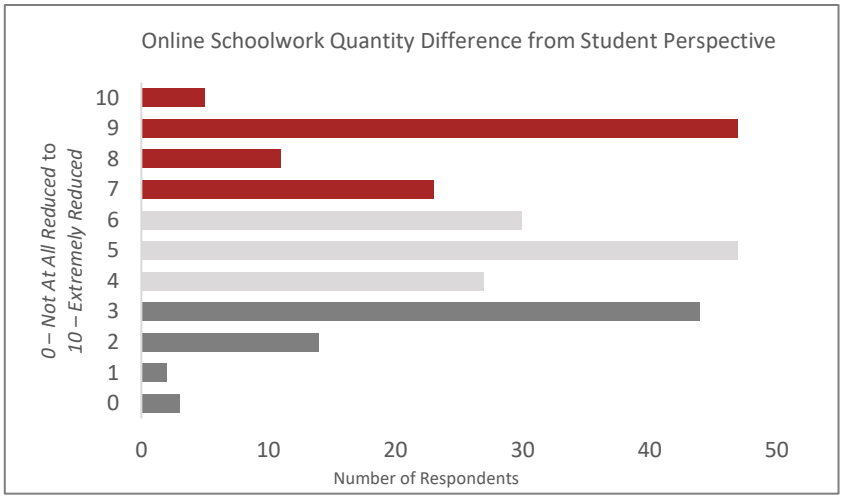


Exhibit 12: (n=243) Student perspective of schoolwork quantity change when learning online (HCCG June 2020 Education Surveys)

Most teachers discussed altering courses to teach as much as possible while emphasizing the essentials.[26] Looking towards the 2021 school year, some teachers expressed worry that course deficits from Spring 2020 will be an obstacle to learning future topics, especially if schooling continues to be interrupted. As a preemptive measure to address this issue, teachers can begin to plan for how multi-year course trajectories can shift to better emphasize prior years' understanding. As suggested in multiple interviews, each subject department within schools/districts can collaborate on these adjustments so that all teachers are on the same page.

> "Schools were still dealing with 19th century structure and systems… this has forced us to look at 21st century structures."

6.3 Digital and Technological Transition

Many schools have been resistant to incorporating educational technology into schools before COVID-19. As a result, identifying and implementing several technologies to replace the presence of an in-person teaching and classroom environment was a "kind of revolutionary" change, as a California-based high school principal noted.[26] She realized that she and other administrators were "still doing with 19th-century structure and systems... this has forced us to look at 21st-century structures." However, for modern technologies to create a sustained positive impact on education, teachers in grade schools and colleges must first overcome several obstacles in adapting these technologies and keeping students engaged.

[24] Campus Technology.
[25] HCCG's June 2020 Education Surveys
[26] HCCG's June 2020 Education Interviews

Developing subject-specific technology guides. Creating subject-specific and comprehensive manuals for teachers, parents, and students for selected technologies and in different languages would help break the technological barrier that many face. A Florida middle school teacher realized that despite his initial assumption that his students were "digital natives," many of them were not computer-savvy, as most had relied on smartphones as their primary technological device.[26] When creating technology guides, teachers should assume that their students lack familiarity with basic computer functions and processes like uploading files to shared drives, downloading and uploading files, and using keyboard shortcuts.

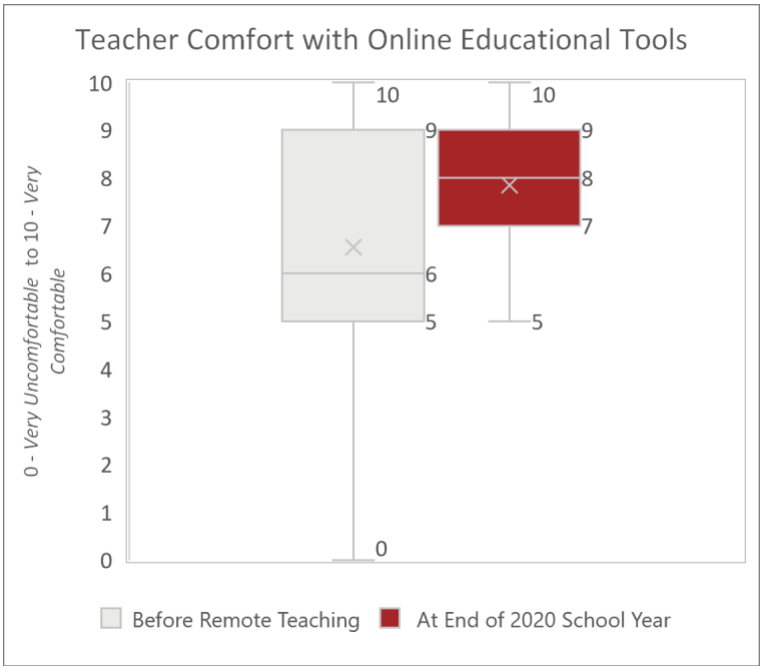


Exhibit 13: (n=52) Changes in teacher comfort levels with online educational tools. (Source: HCCG's June 2020 Education Surveys)

After the few months of remote learning, teacher comfort with online tools has notably increased, as indicated by Exhibit 13. To continue to facilitate smooth online learning, administrators and teachers should implement standardized technology platforms for basic classroom functions (i.e. videoconferencing for holding lectures or classes), such as Zoom or Google Meet. As teachers become more comfortable, they can also take into account the differences between use cases of technologies for different classes. A Florida chemistry teacher noted that in order to increase the efficacy of technological solutions, she would have facilitated more subject-specific technology training for her students; for instance, in her class, students had significant difficulties typing chemical reactions in Microsoft Word and Google Docs.[27] Additional technologies, such as scanning apps or drawing-friendly tablets, could be considered, and guides should be provided for classes requiring specific technical skills.

Teachers noted that the effective adaptation of new digital technologies could lead to more self-sufficient, self-motivated, and independent students in the long-term.[27] For younger students, especially, the effects of learning through technology during a formative growth period will last throughout the remainder of their academic career.

Maintaining existing standards of academic integrity. Maintaining the integrity of student assessments is a significant challenge of remote instruction. This issue of cheating was particularly a problem in high stakes tests such as Advanced Placement exams. A Florida AP environmental science teacher said that despite there being 54 different forms administered for the AP test, students still looked up answers online, leading to obvious differences in their writing style and

[27] HCCG's June 2020 Education Interviews

> Because it was open book, I just didn't bother memorizing the material. It has influenced my course selection for next year because now I kind of realizing that maybe I shouldn't take advanced courses because of how this year went for me.

tone.[27] Some teachers have worked with administration to prevent cheating by implementing various proctoring software like Honorlock Proctoring, which is used by grade schools as well as some large universities. However, teachers have expressed frustration at the high cost of such technologies. Open book exams can be a partial solution, but they too have significant drawbacks. As a Toronto high school student put it, "because it was open book... I just didn't bother memorizing [the material]… it has influenced [my course selection] for next year because now I kind of realizing that maybe I shouldn't [take advanced courses] because of how this year went for me."[28] Recognizing the difficulties with online assessments, some schools switched to pass/fail grading in Spring 2020. However, this is not a viable long-term solution.

An emphasis on problem-based or hands-on assessment could provide one alternative. Some teachers were able to make the testing process less exam-based and more "design-based". As a Toronto electrical engineering professor described: rather than taking traditional closed-book tests that require monitoring, students can generate unique solutions to design problems, which would simultaneously stimulate their creativity and critical thinking at home and resolve the issue of having to monitor students during exams.[28]

[28] HCCG's June 2020 Education Interviews

How can schools best support their students remotely?

Students during COVID-19 ▶ Key takeaways

Even with lighter workloads, most students **produce lower-quality work at home** because of family obligations & mental health

Students want to see more **mental & emotional support resources** from their schools

Enforcement of & access to **masks and sanitation** are crucial for students' comfort on campus

Students during COVID-19 at a glance

80% reported that their **quantity** of schoolwork decreased

Quality vs. quantity

87% reported that their **quality** of schoolwork decreased

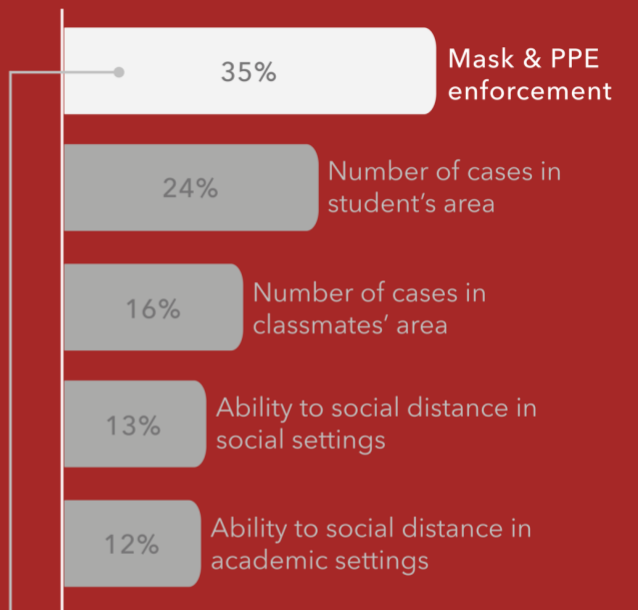
87% have engaged less frequently in **extracurricular activities**

Impact of remote learning on mental health

77% said their school did **not** provide adequate **mental health services** to ease the transition

90% felt **less connected** to their peers (average rating: **3.28** on a scale from 0, "extremely disconnected" to 10, "extremely connected")

+3.5 hr average daily increase in **screen time** after transition to remote learning



35% of students consider **mask & PPE enforcement** a top priority in their decision to return to school

7. Students & Parents

Understanding how to support younger students from a parent's perspective as well as understanding how older students can best support themselves are key to improving education going forward.

7.1 Equity in Home-based Education

Unequal access to technology has a large impact on student's remote learning success. Solving this problem lies mainly in the administration's hands and has been covered in previous sections. This section will focus on other aspects of the home environment that could lead to inequities.

Levels of adult support. Students have access to varying levels of adult support when learning from home. Younger students whose parents must work may not have the supervision needed to engage in remote learning. Older siblings can also be impacted in these situations when they are called upon to supervise younger siblings to the detriment of their learning. In HCCG's survey, **57%** of **students** stated that work or familial obligations detracted from their ability to perform in school. Even in cases when parents are available, they may be uncertain how to best support their child. Central European case studies of parents trying different tactics to support students from Grade 1 to Grade 9 found that the best approach was to decrease expectations from six hours of study to between two and four, and have parent or sibling supervision range from around **70%** of the time for the **youngest students** to around **10%** of the time for the **oldest students**, whenever possible.[29] Thus, parents should determine their involvement based on their child's needs and age while urging teachers and administrators to be considerate of the varying degrees of familial responsibility and parental work obligations students face at home.

Improving access to privacy and space. Another issue raised by students is access to a quiet and private space to attend classes and study. Of HCCG's survey respondents, **34%** responded that their **home environment was unsuitable for remote learning**. As a result, they are unable to fully concentrate on learning or engage in classes. In a student focus group, some students specifically mentioned that having library-like spaces exclusively set aside as workspaces would have made them feel more comfortable, not only working independently but also engaging in class discussions. Background noise from family members made it difficult to discern what the teacher was saying and was a distraction from schoolwork. To further complicate matters, students could not schedule classes for times that were most convenient in their household in order to minimize interruptions. Many students in these circumstances mentioned that asynchronous instruction through recorded lectures would have been beneficial.[30] As shown in Exhibit 14, the most preferred online class model involves the option of live lectures that are also recorded for later viewing. Respondents took an average of 7.01 classes in the 2020 Spring semester, but only an average of 3.02 classes were recorded and available outside of scheduled class time.[31] Recorded

29 Masaryk University
30 HCCG's June 2020 Education Focus Groups
31 HCCG's June 2020 Education Surveys

lessons for younger grades might also help working parents in assisting younger students with their learning.

7.2 Digital and Technological Transition

The move to remote learning required students to quickly learn how to navigate many online platforms, often with insufficient support from their schools. In fact, survey results indicated that many primary and secondary school students were unfamiliar with computers before COVID-19. These technological challenges necessitate better training and streamlining of tools.

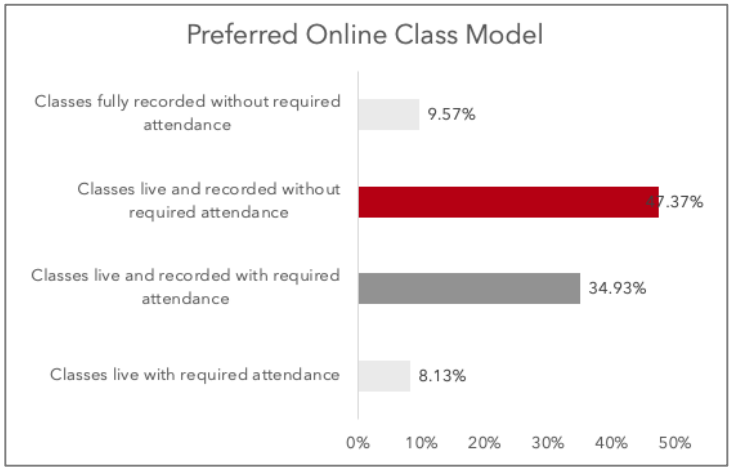


Exhibit 15: (n=212) The majority of students prefer live classes with recordings distributed afterward. Students reported feeling "disconnected" in fully recorded classes, and students with conflicts or in different time zones struggle to attend live-only class. (Source: HCCG's June 2020 Education Surveys)

Familiarity and engagement with technology.

Gen Z is often touted as the generation of tech-savvy digital natives, but as smartphones have become increasingly ubiquitous, a growing number of younger students are unfamiliar with computers. For students whose schools don't offer sufficient resources, many online tools can facilitate their transition to computer-based learning. For instance, TypingClub is a free online resource to help students learn to type, while YouTube is a resource for finding tutorials on general computer use. The most common online platforms used were Zoom (34.25%), Canvas (21.69%), and Google Classroom (14.16%).[32] Most students HCCG surveyed reported that these platforms were moderately useful; however, many struggled with juggling several digital platforms used in different classes.

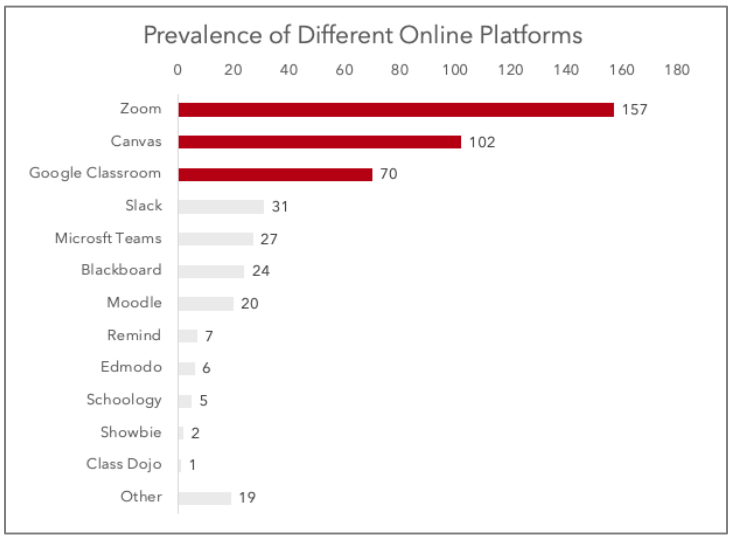


Exhibit 14: (n=212) Students use a large variety of online platforms, but Zoom, Canvas, and Google Classroom are the most popular ones. (Source: HCCG's June 2020 Education Surveys)

[32] HCCG's June 2020 Education Surveys

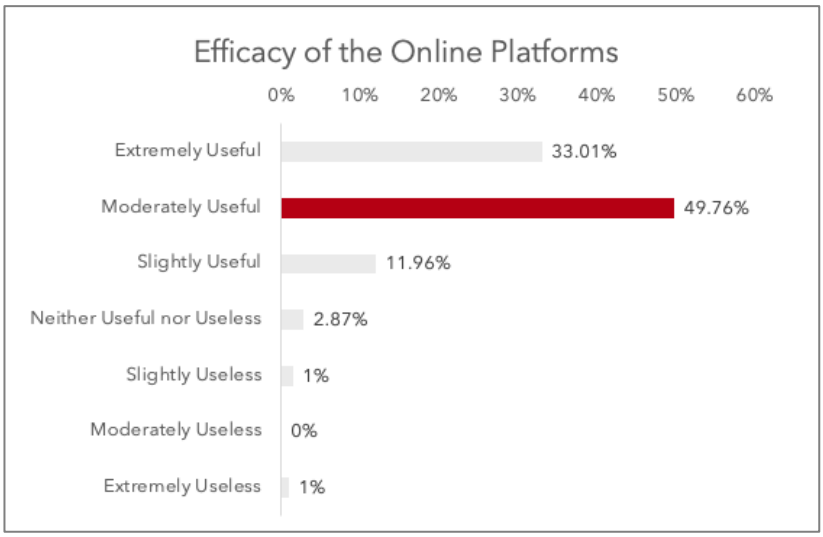


Exhibit 16: (n=212) Although students said it was harder to focus in online classes than in-person ones, most found the online platforms moderately or extremely useful. (Source: HCCG's June 2020 Education Surveys)

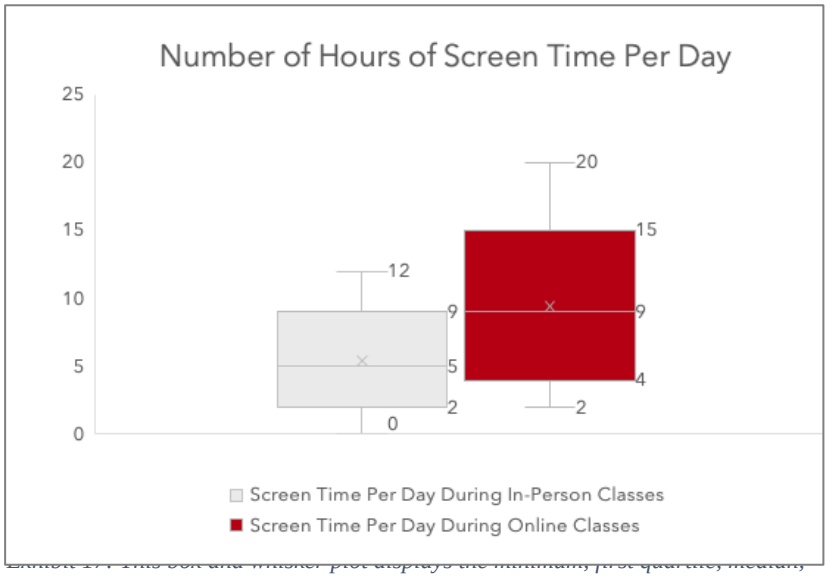


Exhibit 17: This box and whisker plot displays the minimum, first quartile, median, third quartile, and maximum number of hours of screen time reported. All values increased after the transition from in-person to remote learning. (Source: HCCG's June 2020 Education Surveys)

Rising screen times. Students reported **8+ hours of screen time** per day during remote learning, an increase of 4 hours per day prior to remote learning. Many studies suggest that extensive screen time is linked with increased risk of obesity, eye damage, shortened or irregular sleep, behavioral outbursts, loss of social skills, violence, and lack of physical activity.[33] Therefore, as schools plan for online learning in the fall, consideration should be given to the amount of time students spend in front of a screen.

Another side-effect of rising screen times for schoolwork is the potential for technology-driven distractions, combined with a lack of in-person supervision, leading to a decrease in on-task attention. In some cases, schools distributed devices with limited capabilities to access the internet and app store, enabling students to clearly differentiate between devices intended for learning and devices intended for entertainment or "vacation time."[34] In addition, some students find that educational platforms that include a point system, like Khan Academy, can help maintain motivation.

Maintaining productive work habits. Since the move to remote learning, students who lack consistent instruction retain only **70%** of **annual reading gains** and **50%** of **math gains**.[35] As shown

[33] The Mayo Clinic
[34] HCCG's June 2020 Education Interviews
[35] The New York Times

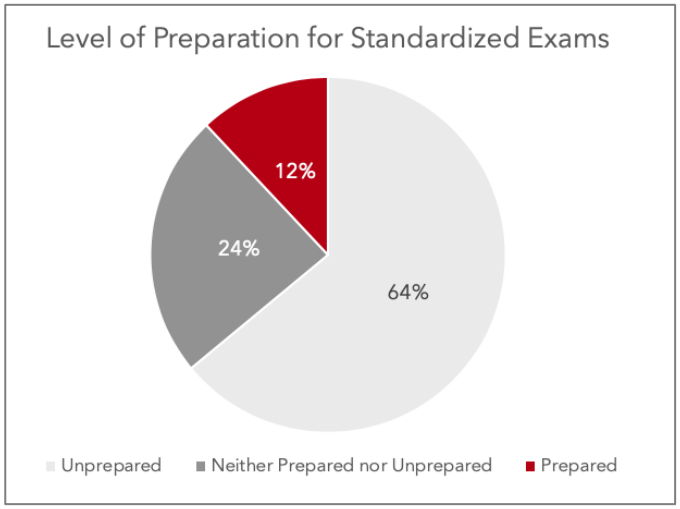


Exhibit 18: (n=212) Most students stated that remote learning detracted from their performance on standardized exams. (Source: HCCG's June 2020 Education Interviews)

in Exhibit 18, HCCG's survey data revealed that only **12%** of respondents **felt prepared** for their finals and standardized exams.

One parent in MA expressed concern over the fact that her seven children's remote classes were review sessions rather than focused on delivering new material: "The whole country is in the same boat, but how long are we going to do this for? We're not advancing at all."[36] College students said that being surrounded by their peers was a motivating force. In the setting of their childhood bedrooms, it was difficult to avoid getting distracted and be motivated to complete their coursework.[37] As a result, **87%** of survey respondents reported that the **quality of their work declined** after the transition to online classes. While they spent an average of 21.28 hours a week on schoolwork before the pandemic, they only spent 17.87 hours per week after.[38]

> "The whole country is in the same boat, but how long are we going to do this for? We're not advancing at all."

Students should reap the advantages of remote learning by taking breaks between classes, avoiding overextending themselves, and attending office hours now that they are less populated. Still, they should maintain a strict schedule/routine to retain a sense of normalcy, use a calendar to set goals and hold themselves accountable, and designate a space for learning (ideally not a bed, since it is associated with sleep).[39] Communicating and coordinating schedules with roommates or family members is also important. Many tutoring services are still available digitally, so students should not hesitate to ask for help. Additionally, students can install website-blocking extensions and take several minutes each day to organize their notes and assignments.[40]

7.3 Physical and Mental Health Concerns

As a result of the quarantine, students lost the opportunity for daily connection with their peers. Lack of physical exercise and the imposition of social isolation both contribute to declining mental health in students.

Improving access to physical exercise and outdoor activities. For some children, the loss of opportunity for recess in school has impacted physical activity. Younger students get most of their

36 HCCG's June 2020 Education Interviews
37 HCCG's June 2020 Education Focus Groups
38 HCCG's June 2020 Education Surveys
39 USQ Social Hub
40 University of North Carolina

activity from social interactions with friends or extracurricular activities, which have been canceled during quarantine. One option to deal with this is to move their activity from spontaneous to planned activity. In China, fitness videos, with attempts to make the exercise "fun and age-appropriate," have had success. If administrators have not provided scheduled fitness supports, parents and students should create fitness schedules, work in fun fitness options such as online videos, or spend time playing outdoors alone or with parents. The most important takeaway, however, is that a concerted effort has to be made in order to have students truly match pre-COVID fitness levels.[41]

Increasing social interaction and collaboration. Of survey respondents, **90%** reported **feeling less connected** to their peers during and following remote learning. In focus groups, students stated that their remote friendships felt more "effortful" and fatiguing rather than energizing: "It's hard to find the motivation to stare at a screen some more." For college students, on-campus living facilitates common experiences that solidify friendships. Participants said that at home, people have different problems that are difficult to relate to, making maintaining friendships harder. Meanwhile, primary and secondary students often have school-based friendships that did not spill over to the home environment.

> "It's hard to find motivation to stare at a screen some more to interact with peers."

However, according to Dr. Julianne Holt-Lunstad, social isolation is linked to premature mortality, as it is comparable to well-known risk factors including obesity, substance abuse, and injury and violence.[42] Loneliness raises stress levels, hinders sleep, encourages unhealthy habits, and in severe cases, leads to depression or anxiety.[43] Moreover, collaboration in education is important to the development of higher-level thinking, social skills, oral communication, and leadership traits. It also boosts students' confidence and increases exposure to diverse perspectives.[44]

Some families avoided isolation by engaging in "social bubbling," in which two or three families agree to socialize only with each other. All members of each pod must be low-risk and exercise good judgment because bubbles must be exclusive – members cannot switch groups or interact with people outside of the group.[45] Several other countries, including New Zealand and Canada, have issued national guidelines on how people can safely socially isolate in pods. Older students can also find ways to engage with one another, fostering closer relationships through coursework, playing video games, watching videos, or participating in other virtual activities and games.[46]

41 EdSurge
42 Loneliness and Social Isolation as Risk Factors for Mortality: A Meta-Analytic Review
43 American Psychological Association
44 Cornell
45 The New York Times
46 For more information see HCCG's Entertainment in the Age of Coronavirus

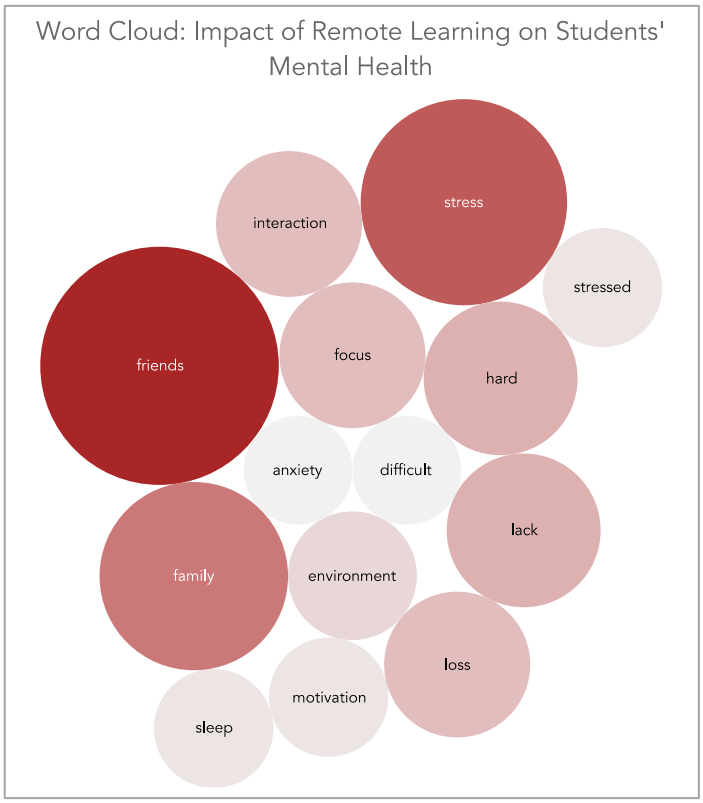


Figure 19: A cloud of the most frequently occurring words in 250 surveyed students' open-ended responses on the impact of remote learning on their mental health. Words such as "a" and "and" were removed, as were common, non-descriptive terms such as "students" and "class." Both size and color indicate frequency of use.

Improving the mental health of students. High school and college are developmentally critical times for mental health; three-quarters of people with mental illness experienced its onset before the age of 25. According to a survey of 2,000 college students, one in five reported that the pandemic has had a significantly detrimental effect on their mental health.[47] In HCCG's survey, **81%** of students stated that **remote learning detracted from their mental health**. Additionally, a hotline run by the Substance Abuse and Mental Health Services Administration saw a more than **1,000% increase** in calls in April 2020 compared to the same month last year.[48] In a focus group, one student said that distance learning "stunted [their] pathway to happiness," while another asserted that it "derailed" their life and "limited [their] personal growth."

Universities should invest in additional mental health and stress-management resources for students and consolidate them in an easily accessible and well-publicized place. They can also create a decision tree that enables students to identify which resource can best address their problem. In addition, colleges should analyze risk factors for anxiety and depression and take early intervention and preventive measures. Schools should also train students and staff on how to improve mental health by emphasizing healthy eating habits, regular exercise, sufficient sleep, and substance abuse prevention.[49]

47 US News
48 The Washington Post
49 The Conversation

8. The Future of Education

The difficulties facing administrators, teachers, parents, and students during the COVID-19 pandemic will shape the future of the educational landscape. Even when teachers and students can return to classrooms, schools will fundamentally change. Building upon the themes previously outlined, the following section analyzes the long-term implications of COVID-19 on education.

8.1 Administrators

Bridging gaps in access to technology. With the abrupt shift to digital learning due to COVID-19, inequities in students' access to technology have become more apparent. Millions of students lack internet access at home, making it difficult for them to engage with their schoolwork.[50] Currently, telecommunication companies like Comcast and Charter are providing free internet access to these students; however, in the long term, solutions to these problems will fall upon schools and governments, not corporations.[51] Even once students can return to school, technology will undoubtedly be a more significant part of the education system than it ever was before. Consequently, schools will address this digital divide immediately.

In high-poverty, urban areas, schools are looking to create 1:1 technology programs, where each student receives a laptop and hotspot from the school.[52] Schools should prioritize those students that lack these resources at home but aim to provide a device to every student. A similar 1:1 approach is likely to be taken in rural areas; however, in rural areas of the US where up to a quarter of the population lacks access to reliable broadband internet services, local governments and schools must work with telecommunication companies to expand their service coverage to these areas before creating 1:1 programs. [53]

Additionally, students today face lower rates of technological literacy since many choose to use smartphones and tablets instead of laptops. Therefore, schools should create more robust technical support and services to students both in and out of school.[54] This support may take the form of having a designated tech team, creating a tech hotline, or creating a virtual chatbot that can help students.

Greater investment in online education. Before COVID-19, most schools had an online presence; however, the recent, sudden shift to digital learning has forced institutions to realize its potential. "This is an inflection point," and while digital learning is unlikely to replace traditional brick-and-mortar schools completely, "it will certainly become a bigger part of the educational mix," said Troy Flint, Senior Director of Communications for the California School Boards Association.[55]

> "This is an inflection point, digital learning will certainly become a bigger part of the educational mix."

50 The Washington Post
51 The New York Times
52 Education Week
53 Federal Communications Commission
54 Education Dive
55 HCCG's June 2020 Education Interviews

In the long term, even once students can return to campuses and classrooms, educational institutions are going to invest heavily in digital learning for two reasons. First, schools have realized that they need an online contingency plan to maintain academic continuity and keep their institutions resilient during both extreme crises and unexpected events. "Schools need to be able to flip a switch on any day and say, 'We're virtual now,'" said Alana Berry, founder of the Bryan Allen Steven School of Excellence.[56] Second, online education can increase access to education.[57] Colleges and universities, in particular, can provide digital versions of their courses so that students can take them online from any location. These digital schools can target individuals with busy lifestyles that may not have the time or financial means to physically go to school. For example, the Harvard Extension School is a school at Harvard University that offers online courses identical to those on campus but at a much lower cost. Since graduating high school seniors are more open to attending college online than ever before, higher education institutions are likely to create digital schools similar to the Harvard Extension School.[58] Once they do so, colleges and universities can play a larger role in closing national and global educational disparities.

> "Schools need to be able to flip a switch on any day and say, "We're virtual now."

8.2 Teachers

Higher utilization of online tools in classrooms. COVID-19 has forced teachers to rethink how Teachers have experimented with a variety of online learning tools, including Google Classroom, Piazza, Kahoot, and Quizlet, and discovered which have created the best results for their students. For many teachers who were using these tools for the first time in their classrooms, they've now learned how to use them effectively and are more open to using them in the future.[59] Additionally, COVID-19 has pushed teachers who were already using digital tools to go out and try other alternatives.[60] Consequently, these teachers have discovered more effective ways to integrate technology into their classrooms. As teachers become more accustomed to these online tools, they're likely to use them again in physical classrooms, especially because their students have also gained experience with them.

Rise in flipped classroom and adaptive learning formats. As COVID-19 moved students to a digital learning format, teachers began using flipped classroom formats to accommodate students in different time zones or difficult home situations. This arrangement allows students to learn on their own time and use the teacher as a resource to further engage with the material. While the flipped classroom was adopted to conform to digital learning constraints, it and other digital formats will most likely persist once schools fully reopen. With technology, information today is more accessible than ever before, so schools and classrooms need to emphasize "how to select and use the information appropriate to each context" instead of rote memorization.[61]

56 Teacher For America
57 Inside Higher Ed
58 CNBC
59 The New York Times
60 Brookings
61 Forbes

Since the flipped classroom format encourages students to do much learning on their own, schools are looking toward implementing adaptive learning platforms. These platforms track a student's progress and "deliver learning resources that are customized to meet the needs of an individual student."[62] For example, if a student incorrectly answers most questions on a specific quiz topic, the adaptive learning platform will inform the teacher that the student hasn't mastered that topic and present the student with additional practice. Although these systems have not been implemented yet since they require a significant amount of data to make accurate decisions,[12] they'll only become more effective as technology advances and more schools decide to use these platforms.

8.3 Students and Parents

Rise in homeschooling and virtual schooling. Since children are currently learning from home, parents have become much more invested in their children's education. Responsibilities that teachers previously had, such as helping kids with homework and making sure they complete their work on time, have been reassigned to parents. As a result, parents are "becoming really aware of the curriculum and more in tune with what their children are doing academically."[63] This new dynamic has allowed parents to discover that they have other options than traditional schooling. **40%** of parents are **considering homeschooling** their children or enrolling them in an online school after the COVID-19 lockdown ends.[64] As more parents choose this option, it will also become easier to find other local families of homeschooled or online students who can share the burden of instruction and form peer groups for students.

Online education seems an especially attractive option for adults that haven't been able to return to school. These online colleges will become more prevalent and will see a rise in enrollment: since universities have had to gain digital instruction experience during this time they can now create more effective programs for students.

More mental health support. COVID-19 has exacerbated the existing student mental-health crisis: students are feeling increased feelings of anxiety, depression, loneliness, and sadness.[65] Schools must support their students mentally to help them perform to the best of their ability. Teachers will likely have to undergo additional training to help them identify students who may be struggling with mental health.[66] Additionally, schools, especially those that lacked mental health resources before COVID-19, will hire more school counselors and psychologists to help children with these issues. [67]

62 Retrieved from Gartner database
63 Teach for America
64 The Washington Post
65 The Chronicle of Higher Education
66 National Conference of State Legislatures
67 Teach for America

Michael Fein

Hailing from Miami, Michael is a Statistics / Computer Science dual major living in Kirkland House. At Harvard, Michael has additionally enjoyed being a part of the Harvard Financial Analysts Club learning and practicing fundamental company valuation techniques. He likes to spend his free time watching movies, eating, and working out.

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Elizabeth is a rising sophomore from Boxborough, MA studying Economics and Statistics. On campus, she is involved with a student-run ESG fund, the Asian American Association, and club squash. Building both community and equity in education is a long-term interest of hers, so working on this paper has been particularly worthwhile on her end.

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Iris is a sophomore in Kirkland House studying philosophy and mathematics. As a member of HCCG, she evaluated marketing personas for a Fortune 500 multinational financial services company. She is interested in pursuing a career in law, and in her free time she enjoys reading, playing piano and guitar, and watching baseball.

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Originally from Arizona, Alicia is a rising sophomore living in Dunster House and is planning to concentrate in Statistics with a secondary in Computer Science. She is interested in using data in the fields of government and product design. Outside of HCCG, Alicia leads business development for a user and market research startup and plays the viola.

Natalka Bowley

Originally from Toronto, Canada, Natalka now lives in Winthrop House and studies Applied Math with Economics and Russian. Outside of HCCG, Natalka has interned in private equity and conducted economics research at the University of Toronto. At Harvard, she debates on the Harvard Model UN team and organizes Harvard's MUN conference.

Chelsea Vuong

Born and raised in the Bay Area, Chelsea is an Economics major at Harvard University. In the past few years, she has held several roles working in the finance, startup, and non-profit industries. Outside of Harvard, she actively educates teens and adults about the importance of financial literacy and obtaining a higher education.

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Shreyas is a rising sophomore from Munster, IN, living in Cabot House. He studies Computer Science, and in addition to HCCG, Shreyas is a member of the Debating Union and South Asian Association.