

2022

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Angel Lin

Maria Garcia

Lucas Negritto

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Recommended Citation

Lin, Angel; Garcia, Maria; and Negritto, Lucas (2022) "A Nexus of Supportive Infrastructure to Foster Student Learning, Engagement, & Flourishing During the COVID-19 Pandemic," *Silicon Valley Sociological Review*. Vol. 21, Article 5.

Available at: <https://scholarcommons.scu.edu/svsr/vol21/iss1/5>

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A Nexus of Supportive Infrastructure to Foster Student Learning, Engagement, & Flourishing During the COVID-19 Pandemic

By

Angel Lin, Maria Garcia, and Lucas Negritto

ABSTRACT.

In 2020, educators and students were faced with a global pandemic that created unprecedented challenges to classrooms across the nation. For many students, the shift to online learning in a necessary effort to maintain educational continuity lasted for an entire academic year. Students attended online synchronous and asynchronous class sessions, interacted with their peers in exclusively online settings, and were isolated to the social and economic constraints of their own households. This study examines the dramatic impact that these virtual learning experiences had on middle school students' learning, engagement, and development during the COVID-19 pandemic. By interviewing middle school students, teachers, and parents of students who participated in remote learning, researchers identified the necessity of a nexus of interconnected support founded on the relationships between the students, parents, and teachers both inside and outside of educational contexts to foster student engagement. This nexus of support was even more imperative for the success of low-income students and students who were children from immigrant families. Even when all conditions of this nexus were met, however, it was still necessary for students to display a remarkable level of intrinsic motivation and self-help behavior in order to maintain consistent engagement. These findings suggest the a radical reimagination of the educational landscape for students and educators' return to the physical classroom: (1) the prioritization of a dynamic, personalized, and evolving curriculum, (2) community-focused, inquiry-based pedagogy, and (3) an audit system that ensures students are consistently supported in all three conditions of the support nexus.

INTRODUCTION

Individuals, families, communities, institutions, and nations all experienced the massive upheaval of the COVID-19 pandemic, fundamentally challenging the operation of every aspect of our social order. In less than one week, businesses across the globe shut down, governments entered states of emergencies, workplaces went remote, classes were moved online, and people were socially isolated. The world of normalcy we once knew was no longer relevant as leaders struggled to meet the urgent needs of the moment. Schools underwent an extreme overhaul in structure. As sites of childhood development and a significant predictor of societal well being, educational institutions in the U.S. carried the burden of dictating the course of our nation's well-being and recovery from these unprecedented times.

This realization led to the following question: "How has student engagement been impacted by the shifts to online learning during the COVID-19 pandemic?" Our research finds that optimal learning and engagement for students participating in online learning during the COVID-19

pandemic is contingent on a nexus of supportive conditions: from teachers, from parents, and from the student. Each of these variables are accompanied by a very specific set of criteria that facilitate student success. Teachers and educational professionals must be willing and able to adapt their curriculums, communicate directly with individual students, and receive financial and technological support from their administrators. Parents must be able to provide an at-home environment conducive to learning without distractions, have a certain threshold of digital literacy, and have the time to be able to meaningfully play a role in their child's learning. Even with these conditions in place, however, students, themselves, must exhibit some degree of intrinsic motivation and deliberate self-help behavior in order to experience meaningful participation and engagement in their classes.

LITERATURE REVIEW

The COVID-19 pandemic has had a significant impact on education, resulting in a sudden shift to online learning. Many ed-tech companies have rushed to provide their services and solutions, often for free. However, there is a risk that these commercial solutions are not always designed with best pedagogical practices in mind, but rather with a focus on making profit from user data. Moreover, there has been increasing critique of how ed-tech is redefining and reducing concepts of teaching and learning. This paper challenges the narrative that claims education can be 'fixed' with technology. Instead, it urges educational leaders to carefully consider the decisions they are making about online learning, and whether they are paving the way to a desirable future of education.

Access to technology and digital literacy, however, is not by any means the cure all to accessibility and the democratization of education. Bach et al. (2013) describes the ways in which the digital exclusion of low income communities in the informational age directly leads to negative economic impacts in the development of social capital. Existing structures undermine full participation of low-income households with less overall digital literacy in community affairs, cultural life, and official institutions—including education. Research also demonstrates that the relational differences in home environments shape youth's engagement with digital content and network creation (Darvin 2018). Even before the shift to virtual learning that forced students to expose the intimacies of their at-home environments to all their classrooms in an online Zoom call, it was clear how class differences in contrasting social positions were exacerbated by the unequal digital accumulation of social capital. Even when technology is made widely accessible in a classroom context, studies have found the ways in which educator bias affects the encouragement students of color receive to expand their technological engagement. Rafalow (2020) observes particular "digital divisions" based on race: white students bringing disruptive or preexisting skills are labeled "innovative;" Asian students who do the same are named as "hackers;" and Latinx students are ignored or considered "troublemakers." Without a deliberate and meaningful inclusion of students of color from various socioeconomic statuses in the technological integration with education, existing paradigms of inequality and domination will continue to persist.

The available literature for educational learning and development is extensive and offers insights into how children and adolescents fare given different learning environments. Prior to the pandemic it was well established that in order for children to survive and thrive developmentally they need: "Good Health, Adequate Nutrition, Responsive Caregiving, Security and Safety and opportunities for Early Learning" (Rao et al. 2021: e741). The environment parents and

caregivers provide children, through emotionally supportive and responsive interactions, ensures good health, nutrition, protection from harm, and opportunities for early learning. Having policies and services is essential in creating these environments for children. The school closures caused by the COVID-19 pandemic impacted such policies and services and may have had an adverse effect in many areas of child development including education (Rao et al. 2021: e741). Since our research focuses on education, technology and the COVID-19 pandemic, this research is important in establishing what things need to be in place in order for children and adolescents to thrive in their development. These disruptions of the pandemic to everyday life, caused disruptions to children's developmental and educational growth. Due to the extended time that children were out of the classroom environment and in remote learning modalities (if applicable), there may have been significant learning loss for not just young children but for adolescents as well (McCoy et al. 2021: e892).

Although research is limited, pandemic related interruptions to Early Care Childhood Education services are likely to have especially strong and lasting impacts on children's long-term wellbeing. McCoy (2018) and other contributors go on to assert that "whereas losses associated with secondary and to some extent also primary school closures can potentially be offset by online or remote learning, the scope and feasibility of such services are currently limited for younger children." In addition to learning loss, COVID-19 has also exacerbated other disparities that can directly impact a child's education. In addition to these environments, policies and services, technology and technology literacy were also impactful in childhood education even prior to the pandemic. In *Social Class and The Unequal Digital Literacies of Youth* publication Darvin (2018: 29) describes how the "dynamic interplay of class-inscribed factors shape the out-of-school literacies of these adolescents." He delves into how physical space, digital and non-digital resources, and modes of parental engagement constructed home environments that socialize adolescents into specific digital dispositions and practices. In terms of digital resources, the findings highlighted how access to software is just about as critical as hardware and connectivity. When speaking of digital literacy he is "Challenging the notion of the "digital native" (Prensky 2001) that ascribes digital fluency to a generation of users born into technology, it illustrates how young people of different backgrounds can develop diverse sets of digital literacies" (Darvin 2018: 27). He also uses social class to examine the differences of these backgrounds and attempts to dissect how learners who have different levels of economic, cultural, and social capital can be socialized into different digital practices. These different digital practices based on social class greatly impact how students approach the technology which they were expected to have mastered during the shift to online learning during the COVID-19 pandemic.

METHODOLOGY

Interviews & Observations:

The participant pool was selected using convenience sampling and purposeful sampling. We conducted eight virtual interviews via the digital platform Zoom with durations varying from 0.5 - 1.25 hours. Three distinct groups of research subjects were interviewed: students, parents and teachers. The three student participants that were interviewed were enrolled in both private and public middle schools during the COVID-19 pandemic. The two parent participants were parents of middle school-aged children who attended school during the COVID-19 pandemic. The three teacher participants were teachers from both public and private schools who teach in the subject areas of humanities, STEM, and foreign language. All three subject pools were selected from

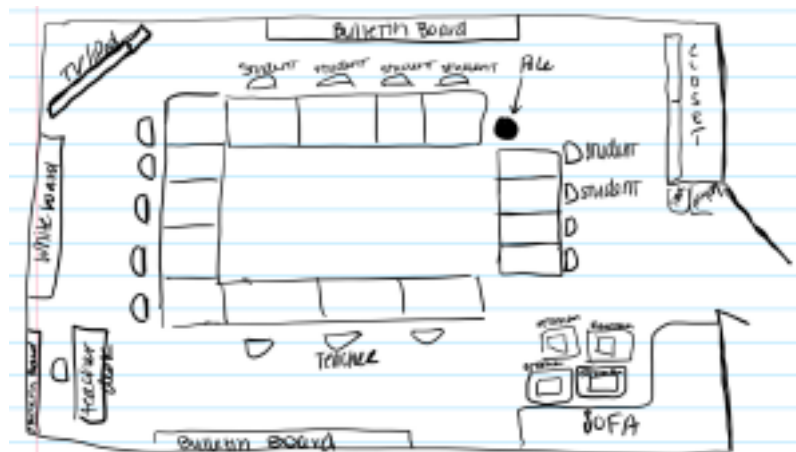
various social, economic, geographic, and cultural contexts. Three separate interview protocols were developed, one for each group, which asked questions about conditions prior to and after the pandemic.

We were able to interview 3 adult females, 2 adult males, 2 juvenile females and 1 juvenile male. Gwen is a white woman in her early thirties. She teaches humanities at a single-sex independent middle school located in the Bay Area. She is also a mother of a three-year-old son and was pregnant with her second child at the time of the interview. Maria is a Hispanic/Latinx woman in her early fifties. She teaches Spanish for Fluent Speakers at the same single-sex independent middle school where Gwen teaches. In addition to being a teacher, Maria is also the Director of a first-generation scholarship program at the school. Melissa is a Hispanic/Latinx woman in her late thirties. She works in education as an aid to a special education program in the Bay Area, located not too far from the middle school her daughter attends. She is a single mother who lives in an apartment with her daughter and a roommate. Mike is a white male who is married and is in his early fifties. His daughter attends an independent middle school in the Bay Area. He is a data administrator for a law firm and has recently bought a home. Dave is a white male in his thirties. He is a STEM teacher in Connecticut at a public high school. Dave is also in charge of technology at his school and gives instruction to teachers on how to use technology. Dave has two daughters, both in high school now. Giselle is a thirteen-year-old female student. She lives with her mother in an apartment close to where she goes to school. She is hispanic/latinx and is part of her school's first-generation scholarship program. This program awards full scholarships to high-achieving girls from under-resourced areas. Samantha is a fourteen-year-old student from a public high school located in the Bay Area. Johnathan is a thirteen-year-old, first-generation Japanese-American student from a public school in the Bay Area.

In-person observations were conducted at a single-sex independent middle school in the Bay Area. This school is small with an average of 67 students per grade and an enrollment of about 201 students total. This school is located in an affluent neighborhood but the student population is drawn from about forty different schools from around the Bay Area. The building is unassuming. It is not a traditional school building - it is a converted office building that has been modified to accommodate the school. There are brightly decorated wood cutouts of people covering the exterior. There is a singular drive way that leads to the back of the building with more parking. The back entryway of the building is flanked by turf areas. On the turf there are 4 large white event tents that serve as outdoor classrooms due to the pandemic. There are hand washing stations right before the double door entryway to the building. The inside of the building has been remade to fit the needs of the school so there are twelve classrooms, some of which are shared and some of which are not. There are lockers for each student along the walls. In addition to these classrooms, there is a library that is filled with curated books for the students. There also is a woodshop/ceramics studio, a traditional art room and a gym/multi-purpose room. Almost all administrative offices are located in a hallway at the entrance at the front of the school, but teacher offices are located more centrally to the classrooms.

The classroom where we did our observations is a multi-discipline room. This room is shared by the 8th grade Humanities teacher and by the 8th grade Spanish for Fluent Speakers teacher. This room was remodeled and was a model classroom before the pandemic. The door into the classroom opens into the hallway instead of into the classroom. There are no windows in this classroom. The only source of daylight comes from a large skylight. As you walk into the

classroom there are two white glossy closets off to the corner on the right. There is a pole in the classroom that is a few feet in front of the closets and breaks up the student desks. The student desks are individual desks but they are set up as a rectangle in the middle of the classroom with all the chairs set up on the outside (see diagram below). Behind the desks on the right hand side there is a dark blue bulletin board with student work displayed on it. At the front right corner of the room there is a television/iPad/camera set up and pointing towards the rest of the class. At the front of the classroom there are two large white boards that are blank. To the left of the white board is a Bulletin board with the word “DREAM” and it has pictures of Civil Rights leaders and important Women laminated and neatly displayed. The teacher’s desk and chair is located in the left top corner of the room directly in front of the decorated Bulletin Board. There is another large bulletin board in the middle of the room on the left side that also displays student artwork. On the bottom left corner of the room there is a blue corner sofa that can easily fit many people. In front of the sofa are 4 ottoman style seats with black plastic tops that act as “tabletops.”



Gaining Access

Our interviews were conducted with participants that were selected through personal connections or through connections through our place of employment. Access was easier to obtain because we were, for the most part, known to the participants that we selected to interview. Our field site was an independent middle school which made it a quasi-private place where “access is associated with the possession of certain credentials or attributes, such as being an employee or a recognizable member” (Lofland et. al. 2006: 35). It is precisely because one of our researchers is an employee and a recognizable member of this community that we were able to gain access to the site for our observations. Since one of our researchers was already known to the community at the site we were observing, we did not have to conduct our research covertly. Our fellow researcher disclosed our status as student researchers to the teachers of the classrooms being observed. This allowed us to approach our research from an “insider” participant researcher role which has the advantage of already knowing the setting and the people being observed. Some barriers to access to this field site were primarily due to the COVID-19 pandemic and to health protocols at this research site. The student researchers that were not employed there were asked to arrive earlier than the scheduled observation time to allow enough time to test themselves and receive the results before entering the classroom with students. Another barrier to access was timing. Because of the truncated schedule of this project, timing was a bit harder to navigate. We were able to email the program director who replied promptly, for clearance to observe a classroom for forty-five minutes to an hour. We then had to coordinate all three researcher’s schedules so that they could observe a full class with the

rotating 6 day schedule that the school has for their students and faculty.

Observer Effects in the Data

As students prior to and during the pandemic, we were deliberate in not reading into the data our own experiences with online learning during the pandemic. When reviewing the data, we distinctly recognized that our positionalities—as students, first-generation students, and gendered/racialized beings—facilitated access to research subjects as well as played a role in the conduct of our interviews, the observation of data, and the creation of codes. Accounting for the subjective “I”s, we could “consciously attend to the orientations that will shape what they see and what they make of what they see. By this consciousness, they can possibly escape the thwarting biases that subjectivity engenders, while attaining the singular perspective its special persuasions promise” (Peshkin 1988: 21).

Ethics

Since we were conducting research that involved minors, an IRB review was requested. In order to be transparent in our research, we had all adults read and sign a consent form with an overview of our research and what it would be used for. There were no incentives given for participation in our research. We informed the parents of the minors who participated in our research and obtained ascent forms. Due to the nature of our observations in a “normal educational setting” (Lofland et al. 2006: 49) we did not have to obtain individual assent for each student in either of the classes we observed, although we did obtain assent from the administrators of the school prior to reaching out to individual teachers with requests for classroom observations.

Tools of Analysis

Our approach to this research was an inductive one. After seeing the effects of the COVID-19 pandemic in our own lives as students, we developed broad questions about its impact on education and then further narrowed our scope. Through the inductive process and through our shared interests in technology and education we arrived at our research question.

Throughout the research we relied on social constructivist frameworks which allowed us to study what the effect of COVID-19 has had on education, and what part technology has played. Our constructivist worldview led us to conduct interviews with the affected populations and to tailor our questions to each distinct group. This methodology is reliant on “doing inquiry in more natural settings, collecting more situational information, and reintroducing discovery as an element in inquiry, and, in the social sciences particularly, soliciting emic viewpoints to assist in determining the meanings and purposes that people ascribe to their actions, as well as to contribute to “grounded theory” (Glaser & Strauss 1967; Strauss & Corbin 1990). All these aims are accomplished largely through the “increased utilization of qualitative techniques” (Denzin & Lincoln 1994: 110). Since this methodological approach is not theoretically neutral we have to be careful to not let that affect how we carry out, collect, code and interpret our data. Our observation data and interview transcripts were coded by researchers using open and focused coding, which we then double coded into pre and post COVID categories. Specific codes included pedagogy, physical space, community, and technology. Researchers were deliberate in utilizing reflexivity to ensure that their individual positionalities would not bias approaches to the data.

RESULTS

The impacts of the COVID-19 pandemic were staggering at every level of student learning, engagement, and social-emotional development. Information gathered from interviews indicated that students experienced significant gaps in learning, struggled to stay engaged, and fell behind in their social development. Parents struggled to step into their new roles as supportive participants in their child's learning and had to negotiate a restructuring of their at-home dynamics. Teachers rapidly redefined their classroom for an online setting and quickly evaluated the urgent needs and experiences of isolation that now affected their students. Field observations revealed the implicit mechanisms by which the in-person classroom environment was able to facilitate optimal student engagement by fostered relationships and spontaneous interactions—conditions that the virtual classroom was simply unable to effectively emulate. Each of our research subject categories, however, demonstrated the comprehensive nexus of supportive infrastructure necessary to mitigate the harms and disruptions in student engagement brought about by the shift to online learning.

Parents

As the head of the household, parents became solely responsible for providing students with the physical space for their learning environment. At the start of lockdown conditions in March 2020, parents cited their children spending upwards 24 hours per day at their home. Parents who were offered the option to work-from-home were asked to completely restructure their at-home routines and the interactions they had with their children. Working from home, however, meant that they had to essentially compete with other household members for physical space and network connectivity to adequately perform their jobs. Melissa, a single mother, discusses having to share a physical space with her daughter Giselle and roommate who was conducting virtual therapy sessions with children as a speech therapist:

She had therapy going on with kids and then Giselle was there and so we'd just kind of get up and get ready and eat breakfast and then everybody kind of knew where to go. My roommate in her room, Giselle in her room, and I was in the living room. The house is kind of quiet and nobody's really making noise because, you know, you're going to interrupt you know my roommate.

Melissa cites the creation of improvised workplaces for all members of the household. For many families, it was difficult to provide the physical chair, desk, and private space for students to adequately participate and engage with video calls. At the independent school that Giselle attended, the school was able to provide students with a desk, chair, and noise canceling headphones to block out any disruptions associated with a shared space. The integration of technology into their schoolwork, however, meant that students were experiencing drastic increases in their screen time. All parent participants cited this as a major concern of theirs: Mike, a father of a middle school daughter at the time, expressed disdain that his daughter could not be “outside with friends and stuff or meeting up with school friends to, you know, to go to the park and stuff. That was not happening at all. So basically their only means to communicate with each other was screen time.” Parents watched with anxiousness as their children's screen time went from 0-3 hours per day to, at times, tripling or even quadrupling, to 3-12 hours per day.

Parents who worked outside of the home as essential workers, however, faced their own set of

problematic circumstances. Oftentimes, leaving for work meant that they were leaving their child at home alone and socially isolated for the entire day. The lack of supervision became a slippery slope to a lack of routine or accountability for the student. Johnathan, whose parents both worked at a restaurant, was left home alone for most of the day during the pandemic. When asked what he would do on a typical weekday, he responded: “Go to school, stay in bed—which was bad. And I never turned my camera on either.” Johnathan experienced severe disengagement during the pandemic, admitting to neglecting his assignments and ignoring his teacher’s messages. Without his parents at home to keep him accountable, he spent his entire day Face Timing his one friend from bed or scrolling through his phone. Even after his parents came home from work, they often did not have the capacity to help him with any schoolwork:

Um, my mom tried and...sometimes it helped. But, she doesn't really know English, so it's really hard for her to explain stuff. And it made both of us stressed. I think she's the one who encouraged me to search up the answers and she searched up most answers.

Johnathan’s mother did not have the educational background, time, or language skills necessary to play the additional role of his tutor. Prioritizing the completion of assignments over genuine comprehension, the two resorted to simply looking up the answers to homework assignments online. Later in the year, when it came time to be evaluated on the content covered in his online classes, Johnathan immensely struggled. He nearly failed two of his classes and had exhibited severe gaps in learned content. From Johnathan’s experience, it became clear that if parents did not have the means or capacity to keep their children accountable and help set up engagement-focused routines, students were discouraged from doing so themselves.

Issues with technology and communication similarly fell along socioeconomic lines. Parents became the students’ most immediately accessible resource when it came to technological issues; for some pairings, however, this often became a problematic and frustrating experience. Parents from families at lower socioeconomic statuses typically exhibited lower levels of digital literacy and less confidence navigating online programs such as Zoom, Google Suite, or email.

Researcher: Before the pandemic had you ever used platforms like zoom Google meet or any other conferencing? And if so, did you ever have to use a computer for work?

Melissa: yeah but, just like usual emails and stuff like that, but not like video conferencing.

These findings corroborate existing research observing how digital inequality and access to technology fall along disparities in race, income, immigration status, and language barriers (Bach 2013; Darvin 2018; Rafalow 2020; Torralba 2015). Across the board, parents cited their children being more technologically “savvy” than them; it was parents in lower socioeconomic households, however, who hesitated to initiate any direct outreach to teachers if they noticed that their children were struggling. Parents who never used a computer for work or education assumed that their children would be able to either resolve their issues on their own or reach out to their teacher for help. This finding supports the existing literature of the “digital native” mentality which constructs the notion that young users are naturally more knowledgeable and skilled in operating digital tools than their older counterparts (Darvin 2018: 27).

Teachers

Teachers were tasked with the most significant burden at the start of the pandemic: to radically redesign their classrooms and curriculums for online learning—all within a matter of weeks. Many cited frustrations with the uncertainty of the pandemic: without a clear timeline, planning out their curriculum became extremely difficult. What became paramount, then, was clear communication from administrators about the resources and technological training made available to educators. Teachers from independent or private schools cited experiencing significantly more support than their counterparts at public schools. At the independent school Maria worked at, teachers worked with the technology team to install additional monitors in their homes and were provided standing desks to work on.

Recognizing and anticipating these areas of need relating to technology and individualized attention were profoundly important to promoting student success, particularly students at lower socioeconomic statuses. Teachers had to be deliberate in ensuring that their students had the technological means to engage in the online classroom. Beyond the one-to-one personal laptop programs that many schools already had prior to the pandemic, teachers recognized the need to support students at lower socioeconomic statuses who were at higher risk for disengagement. Gwen, the humanities teacher from the independent school, described how teachers came together to unofficially identify these students at higher risk:

It was harder to get in touch with kids who are lower SES, to be honest. It was harder, like, there was a direct correlation. So we kind of had to know who could get who. Two of them I could get from that class because one of them was my advisee. Well, I had very complicated advisees at that time who were in seventh grade. Three of them were on everyone's, like, 'Can't-Get-This-Kid' list.

In addition to providing tangible means to support these students—internet connection, technology, a desk and chair, gift cards for groceries, etc.—teachers found that it was necessary to establish consistent, reliable, and direct lines of communication. Reinforcing this connection with students on the improvised collective ‘Can’t-Get-This-Kid’ list and ensuring that students had the opportunity to reach out for help allowed them the opportunity to establish agency over their own education and avoid losing touch. Maria, the director of the first-generation program at the independent school also described being deliberate about establishing lines of communication with parents. To the Spanish-speaking parents who expressed hesitation using email and other forms of technology to ask questions, she joked, “If you can use WhatsApp, you can send me an email.”

Across the board, the most significant contributor to student success was the personal relationship that teachers had with their students. Without the external accountability measures and direct pressure that came with in-person learning, student motivation and accountability largely relied on respect for their teacher. This respect, however, had to be mutual. Middle school STEM teacher David describes:

It's about the relationship you have with the kid and the relationship that the student has with the work, more than anything else. It can't be about grades, it can't be about needing to get into college or whatever it may end up being that way.

Teachers had to be accommodating and understanding of the at-home conditions that students were learning under. Mutual respect fostered the most effective pedagogy, allowing for teachers to shift away from strict evaluation methods and punitive curriculums. A more expansive explanation of the shifts in curriculums that took place during the pandemic follows.

Students

The social isolation and loss of community suffered by these students at this formative time period in their social and emotional development took a tremendous toll on their well-being. While it is not within our scope as sociologists to evaluate the psychological impact that online learning had on these students, the interviews with students consistently demonstrated a weak or complete lack of social network. Students who enrolled in new schools in mid-pandemic recalled not having any friends at all and others described only consistently keeping in touch with one or two friends. The only mechanism to maintain communication at this time, of course, was virtually. Giselle, a student who began the sixth grade in 2020, described her struggle to make friends at her new school: "Um well...I didn't...so my school has these little cohort groups. So like those were like my friends but I wouldn't talk to them. We would just text, "Hey are you in class already?" Like, that's all." Even after the return to online learning, Giselle described awkward lunch breaks where students unaccustomed to in-person socialization would sit in silence. This lack of a social network significantly contributed to academic disengagement. Without peers to motivate their learning or engage within the classroom, online learning was a draining and tiresome burden. Students fell into a state of learned helplessness and suffered exacerbated mental health states. These findings underscored the necessity in developing a sense of community and human connection within the classroom.

Many students exhibited extreme wariness and hesitation when reaching out for help. For many students who were in virtual classrooms with teachers who they had just met for the first time, they expressed anxiety about speaking up in class. Giselle, who prided herself on being a "teacher's pet" prior to the pandemic, expressed her stress and intimidation about not being able to make connections with her new teachers from a distinctly racialized perspective: "Um, like I was like I was a bit scared at that. Like, it was hard because of our, like, our races. Like the skin color. Like, all my teachers are like white, mostly white and I thought they weren't gonna like me, so yeah. I'd be in my own little bubble." Whether or not these fears were founded is less relevant than the fact that the student perceived her teachers' help as inaccessible due to her inability to develop personal relationships with them. Logistical constraints also hindered students' willingness to engage with their teacher. Samantha, who at the point of the study had moved onto high school, explains that the online learning medium required that students learned the material on their own. Shortened class times and the switch to asynchronous learning contributed to the inaccessibility of teachers:

You kind of had to learn a lot of it on your own, you know? They'd be like, oh, like, look at these pages in the workbook, you know? And, like, do that. And you'd be like, I have no clue how to do this, you know? And it's not like, you can go to, like, office hours or, like, go into your teachers class after school and be like, hey, like, you know I had a question about the summer homework. And it was very—like, there wasn't any time in class to ask questions about the homework, really, because they were so busy, like, giving you everything you need for the next assignment.

Additionally, many students had resigned to the notion that their parents were unable to provide them with direct support at this time. Recognizing that parents were balancing their own concerns with finances, work, caring for family members, and the well being of the family, many students simply did not ask their parents for help.

Ultimately, the most important element in the nexus of supportive infrastructure for student learning was the student's own capacity for intrinsic motivation. If students were not willing or able to establish agency and ownership over their own learning during the COVID-19 pandemic, they fell behind. Across the board, students experienced a lack of focus and lower academic performance. For some, however, there was a moment in which they decided to take hold of their learning and truly commit to academic success. Giselle's mother, Melissa, describes a moment where her daughter just decided that she needed to "get it:"

I think, after failing so much, she kind of was like, I need to get it. Okay, I agreed with her. She just went, I need to get this together—because you know some weeks, she wouldn't submit her assignments right or they would go somewhere else—and it was just, like, she likes to be on it.

It was after this moment of realization and self-awareness that Giselle began to excel in school once again. She began reaching out to her teachers, working until she could understand how to technically work her computer, and being deliberate about the routine she made to complete her assignments. Giselle was able to demonstrate an outstanding display of intrinsic motivation. With all of the existing factors from before her switch in mindset remained the same, this moment of realization was triggered only by her sense of self. For other students, this intrinsic motivation and desire to learn did not come as naturally. Johnathan, who was already experiencing at-home conditions not conducive to learning, did not fare as well. Even though he was experiencing direct outreach from teachers, Johnathan could not become motivated to improve his own academic performance. The lack of accountability measures and the experience of social isolation during the COVID-19 pandemic intensely challenged students who benefitted from these normative structures. When asked about the supportive structures he had available to him at this point in his learning, Johnathan admitted dejectedly: "Actually, um, people did try to help me but I didn't really know how to help myself." Even if parents and teachers were able to create the most ideal conditions for online learning (physical space, community ties, direct communication, financial support, perceived availability of help, mental health and well-being) for their students—an admittedly unrealistic scenario—, their engagement and learning experience was still fundamentally dependent upon their intrinsic motivation and self-help behavior.

Shifts in Curriculum

Shifting to an online format caused major discrepancies in the curriculum for teachers during the pandemic. Some materials and learning experiences that were offered before the pandemic—guest visitors, field trips, site excursions, observation—were simply inaccessible in a virtual format. Teachers were agile in modifying their course content to fit the new modality. Specifically, Gwen discussed the issues that arose with the shortening of her classes: having less time in class meant that material took twice as long to cover over the school year, or certain concepts simply had to be covered in less depth. She also describes how a significant portion of the learning took place in the form of asynchronous assignments, putting students in a position where much of the material they were engaging with was being self-taught. It was not until the

school began reinstating live classes that teachers felt a sense of normalcy and routine that provided more opportunities for consistent engagement with students.

Understanding the ways in which online learning was significantly difficult for most students, many teachers decided to change their course load. Maria took the most radical approach to redesigning her curriculum:

So we had a class and then I just said we're going to read three novels and we're going to discuss. It's not going to be writing assignments and it's not going to be grammar exercises. We're just going to talk in Spanish, and we will open it up one day in each week, when you can, we can just gossip about whatever you want to do, *chisme*, you know, but as long as in Spanish.

She allowed her students to bring in their own content to discuss in Spanish—current events, funny videos, personal matters, and more. Maria reimaged her classroom as a space for community and bonding, rather than focusing on strict evaluation and assessment methods. By eliminating the rigid structure for her classes, she took on a holistic and interactive approach to learning that met the needs of students who were undergoing social isolation and online fatigue. This demonstrated a deliberate attempt to adapt the curriculum to meet the emotional and social needs of students.

Interestingly, however, traces of this more lenient and holistic approach to organizing the classroom curriculum remained *after* the return to in-person learning. From her eighth grade humanities students, Gwen observes,

There's a lot more pushback on homework than before because they're like, 'I've been to school, I should be done,' and we're like, 'No, like you have to do homework, too.' And we don't give that much homework to be perfectly honest, compared to a lot of schools, but I think kids are really, really stressed and they didn't have the ramp up that, like the gentle ramp up, that happens, normally from five, six, to seven.

The need for a gradual acclimation to the regular standards of in-person learning indicate a significant difference in curriculum expectations for both students and teachers. Students who have not had to differentiate between classroom assignments and homework assignments for the past two years are being challenged with coursework that, in most cases, are two grade levels above what they remember from the last time they were in in-person instruction. Many students—including Johnathan who nearly failed two class subjects during 7th grade but was able to pass by completing some makeup assignments at the end of the online school year—are struggling to keep up with the pace of in-person instruction and are still making up for an entire school year of lost knowledge. In order to account for these disparities, educators must be creative in reimagining their curriculum in the return to the classroom.

Interactive Community Learning

Field observations of the in-person classroom emphasized the ways in which community is central to the optimal learning environment. In each of the classes we observed, it was clear that the girls were all extremely close with one another. While they were aided by teachers who valued their empowerment and affirmed their achievements, some of the most affirming and

validating moments were prompted by students actively and vocally supporting their peers.

Within Maria's Spanish class, these patterns were especially relevant: the class starts with three of the students standing up, walking to the front of the classroom, and reciting a poem. After each student recites the poem, they receive applause from the rest of the class and each respond with a gleeful smile. The teacher continues to affirm the class and leads the class from the desk with conversational directives. One of the girls who gets up to speak struggles for a moment. She pauses and the teacher interjects to remind her of what to say. At one point, the teacher corrects her pronunciation of a word. Maria looks at us and explains in English that the girl is Brazilian and Portuguese, making her pronunciation especially difficult as she occasionally slips into a Portuguese accent. As the individual presentations go on, other students who struggle look to their peers for help. The students support their classmate by reminding them of the word that they have forgotten or a pronunciation they have mixed up. The contributions are spontaneous and they do not wait on their teacher to call on them to help out. While a majority of the classroom discussion is fluidly conversation based, there are times when the teacher directly poses a question to the class. When students do not immediately know the answer, there is a pause in the conversation. After having an 'aha!' epiphany, one of the students raises her hand and proudly answers the question.

When contrasting this with the restrictive format of online learning, it becomes clear that the online classroom does not leave the same room for spontaneous empowerment and peer support. In an online classroom where students have to unmute to speak in class, students were much more hesitant to speak aloud. Online classrooms leave little room for cheering, side comments, jokes, or affirming nods. It is difficult to even know with certainty if students are fully engaged in one another's words when their peers are speaking due to the ability to multitask on a computer.

Another extremely valuable experience of community learning presented by the physical classroom, it became apparent, was the opportunity for students to assist one another in their learning. Students learned with one another and, when one of them began to struggle with a topic, others jumped in to help before even being prompted to do so by the teacher. At one point in the Spanish classroom when a student had a question about one of the grammatical concepts in the book they were reading, another student talked her through the concept in English. The teacher did not say anything, even letting the girls continue their conversation in English despite her Spanish-only policy for the sake of allowing the student to communicate the learning process to the other student.

DISCUSSION

Conclusions

We began our research by asking ourselves, "How has student engagement been impacted by the shifts to online learning during the COVID-19 pandemic?" In conclusion, we have identified not only how engagement has been impacted, but why it is important to understand a holistic view of education to solve engagement issues. Student engagement is a measure of how dedicated, curious, interested, and enthusiastic students are when they are learning. Educators are coming to understand how students' learning and retention are optimized when the students are excited about what they are studying; students are far less likely to retain information and engage with

material if they are uninterested. Contrary to what one may intuitively assume, however, the factors that contribute to engagement are not all based directly on learning or student motivation. Multi-disciplinary support must exist inside *and* outside of the classroom. These support structures are embedded in the relationship between teacher, parent, and student. Educational professionals must be willing and able to adapt their curriculums, communicate directly with individual students, and receive financial and technological support from their administrators. Parents must be able to provide an at-home environment conducive to learning without distractions, have a certain threshold of digital literacy, and have the time to be able to meaningfully play a role in their child's learning. Even with these conditions in place, however, students, themselves, must exhibit some degree of intrinsic motivation and deliberately self-help behavior in order to experience meaningful participation and engagement in their classes.

Implications

Our research offers three proposals for a radical reimagination of the educational landscape in the return to the physical classroom: (1) the prioritization of a dynamic, personalized, and evolving curriculum, (2) community-focused, inquiry-based pedagogy which considers the strengths and weaknesses of asynchronous and synchronous classrooms, and (3) an audit system that ensures students are consistently supported in all three conditions of the previously identified nexus.

Strict constraints on curriculum content prevent teachers from ensuring that students are adequately engaged in their classroom. This is not to say that teachers would not benefit from subject standards and supporting material for curriculum content. Rather, teachers significantly benefit from meaningful mechanisms of feedback from their students. This feedback is usually understood as levels of engagement through direct modes of communication. At this moment in time, it is impossible to completely personalize learning for each student; it is simply not scalable for the teacher to design an individual curriculum for every student. However, in allowing teachers to creatively increase student engagement on a personal level, the unique needs and conditions experienced by students—in their at-home environment, in their emotional and social development, in their willingness to engage in self-helping behavior—are addressed to optimize engagement. This dynamic curriculum is directly connected to student centered pedagogy. In our interviews and observations, we saw that teachers valued the freedom of choosing curriculum and ability to evolve the content for their individual classes, which teachers also believe that students feel a stronger sense of ownership and excitement about course content when they can discuss and interact with personalized curriculum that contain direct application to their lives. Without a direct line of communication from teacher to student, a teacher cannot efficiently evolve their curriculum.

The pandemic highlighted the school's critical role as a space of community for students. Beyond explicit roles in learning and education, schools play a role in the de facto emotional and social development of students. This underscores the necessity of community care in supporting students' overall success, happiness, and well-being. This community care extends beyond the classroom because the "hybrid classroom" model is not going anywhere. We've concluded that hybrid model classrooms can be functionally convenient and effective in designing course curriculum, but most importantly have identified that community care must exist in and outside the classroom. The asynchronous/synchronous nature of a classroom opens a new personal window into the lives of students not previously seen by teachers and peer students. An audit

system can create a systematic process that digests a picture of students' experiences and understands their unique challenges, while respecting their privacy. If a student is lacking a key support mechanism outlined in our research, teachers can shift curriculum, institutions can deploy resources to assist students in those areas and evolve campus resources to generalize this support to groups. There ought to be less focus on auditing an institution's student academic performance or the size of their classes. Rather, the COVID-19 pandemic highlights the ways in which evaluation must prioritize student engagement, which contains the emotional and experiential components that derive from community health. We have identified inquiry-based learning as the most effective description of the pedagogy that students need for success. With inquiry based learning, students play a more active role in the learning process. This approach encourages students to explore the material, ask questions, and share ideas, rather than simply receiving information from the teacher. In turn, teachers can evolve their curriculum, but they must be able to communicate and have no restraints on doing so. Further, the class must feel like a community to facilitate this environment. Finally, we can abstract the conditions of this environment with an audit system so institutions can numerically represent the health of the nexus of conditions.

Future research

As schools return to in-person learning, more research must be done to evaluate exactly where students have fallen behind. Researchers will be asked the following questions: How can educators address and rectify children's gaps in social, academic, and emotional development? What permanent shifts in classroom curriculums will we see after the return to in-person learning? Can we close the digital divide for more equitable education? Perhaps, most importantly, how can educators reimagine the classroom to model community care and cultivate the thriving of their students? Further, we have suggested an audit system to measure student engagement, but more research is needed to design and test whether the idealized system functions correctly.

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