CHRISTENSEN INSTITUTE

CARPE DIEM:

Convert pandemic struggles into student-centered learning

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"Hybrid learning (having both in-person and online learners at the same time) is impossible to do effectively."

"It is nice to have all of my curriculum online now...Overall, I think a combination of in-person instruction and remote supplementation is the wave of the future."

"Despite everything that has happened, we have continued with the business of education. It might not be ideal, but we are still working super hard to provide our students the best education that we can."

—Comments from K–12 teachers, Spring 2021

INTRODUCTION

Ask educators their opinion of online learning in 2021, and you're likely to get any number of answers. Some educators are opponents—especially if they interpret online learning to mean the emergency remote and hybrid teaching thrust upon them by COVID-19. Some are pragmatists, noting that as technology offers an ever-expanding library of resources for learning, schools and educators should ensure equitable access to those opportunities. And some are enthusiasts, not because of some idealistic vision, but because they've witnessed how intentional, well-developed online learning can be an enabler of student-centered learning.

Since the Christensen Institute's founding in 2008, we've tracked the adoption of online learning across a range of applications—from online instructional videos that teachers incorporate into their lessons, to math and reading apps used in classroom learning stations, to supplemental online courses (see Figure 1). Through our research, we've seen clearly that online technology alone doesn't inherently beget a quality education.[1] When implemented poorly, online learning distracts students, crowds out high-quality, teacher-led instruction, and makes teaching more complicated.[2]

Nonetheless, our research also gives us the equally strong conviction that online learning implemented well can enable powerful learning experiences that help all students reach their full potential. Quality online learning engages students, customizes their learning pathways, and empowers them to take ownership of their learning. Most importantly, online learning at its best expands teachers' capacity to differentiate instruction, build relationships with their students, and orchestrate deeper learning experiences.[3] Our research documents numerous examples of US schools that leverage online learning to tailor education for an increasingly diverse nation of learners.[4] Ultimately, we believe online learning is essential for making high-quality, student-centered learning possible at scale.[5]

Over the last two decades, online learning adoption happened gradually in K–12 schools, mostly among innovators and early adopters. Then in 2020, the onset of COVID-19 ignited widespread adoption of emergency online learning, practically overnight. Online learning moved swiftly from the periphery to the core of K–12 education since it offered the most practical way to keep students learning while school buildings were closed.

Figure 1. Various applications of online learning in K–12 education

Applications	Examples of providers
Virtual schooling	K12, Connections Academy, My Tech High
Supplemental online courses	Florida Virtual School (FLVS), Michigan Virtual, ASU Prep, Outschool
Online curriculum	Edgenuity, Edmentum, FLVS, VHS Learning, FuelEd
Individualized study and practice	Khan Academy, ST Math, DreamBox Learning, i-Ready, Newsela, Achieve 3000, Lexia Core 5, ALEKS, Actively Learn, MATHia, Zern, Quill
Online assessment and progress monitoring	i-Ready, Istation, Formative, Quizizz, Mastery Connect, ASSISTments
Online lesson creation	Nearpod, Edpuzzle, Pear Deck, Blendspace
Online learning management	Google Classroom, Schoology, Canvas

Beginning in the fall of 2020, the Christensen Institute undertook a two-year series of nationally representative surveys to make sense of online learning adoption and practice at this remarkable juncture.[6] By now, American students have experienced over a year of pandemic schooling. What role has online learning played during that period? How will the pandemic impact online learning adoption and practice in the future? And what should education leaders do to ensure that online learning, where it takes root, ushers in a more student-centered future?

This report shares insights from our most recent round of surveys, which collected responses from 872 K–12 administrators (representing 841 districts from 49 states plus the District of Columbia) and 1,042 K–12 teachers (representing 821 schools from 48 states plus the District of Columbia) in April and May of 2021. We also conducted follow-up interviews with 15 of our survey respondents to get a more nuanced understanding of their teaching arrangements and experiences over the course of the year.

In Part 1 of the report, we describe what instruction looked like for teachers and across school systems during the 2020-21 school year. In Part 2, we share what survey respondents reported about their future plans for online learning and online-enabled instructional models. Finally, in Part 3, we make sense of the trends that surfaced in the survey data and offer insights for steering pandemic-induced emergency online learning toward student-centered learning across K–12 education.

Online learning moved swiftly from the periphery to the core of K–12 education, offering the most practical way to keep students learning with school buildings closed.

PART 1: K–12 SCHOOLING DURING A GLOBAL PANDEMIC

"Hybrid" and "remote learning" became household terms in 2020, but they can mean different things in different circumstances. At a basic level, **remote instruction** is formal education that happens when students are not in the same physical space as their teachers, and **hybrid instruction** involves both remote and in-person learning. But once you wade into the details of those arrangements, the common lexicon breaks down. To help bring clarity to discussions about hybrid and remote learning, our surveys were designed to map the nuanced differences in instructional models, programs, and practices across the country over the last year.

Although both hybrid and remote learning often make use of technology and the internet, it's important to note that what most teachers and students experienced during the 2020-21 school year was not high-quality online learning. Most school systems operated emergency remote and hybrid learning arrangements—implemented without the benefit of advance planning, educator development, and best-in-class online learning resources. These differ markedly from the quality online learning programs we've studied extensively in our work predating the pandemic. As such, findings from our surveys should be considered as representative of emergency arrangements during a pandemic, not as evaluations of online learning writ large.[7]

Multiple arrangements: Most teachers experienced varied arrangements during the year—sometimes simultaneously.

During the 2020-21 school year, teachers' instructional arrangements were far from static. As Figure 2A shows, most teachers experienced in-person, remote, and hybrid arrangements, all within the course of the school year. Furthermore, many were teaching in multiple arrangements simultaneously (as indicated by teachers' responses about their teaching arrangement at the time of the survey, which add up to more than 100%).

With all the variations in teachers' arrangements, no single arrangement dominated. When we asked teachers about the arrangements they used *most often* during the school year, their responses divided them almost perfectly into thirds (see Figure 2B). In short, the only commonality among teachers' experiences was the lack of a common experience. From a national perspective, it's inaccurate to think of 2020-21 as a school year defined primarily by remote learning.

Figure 2A. Teaching arrangements used during the 2020-21 school year

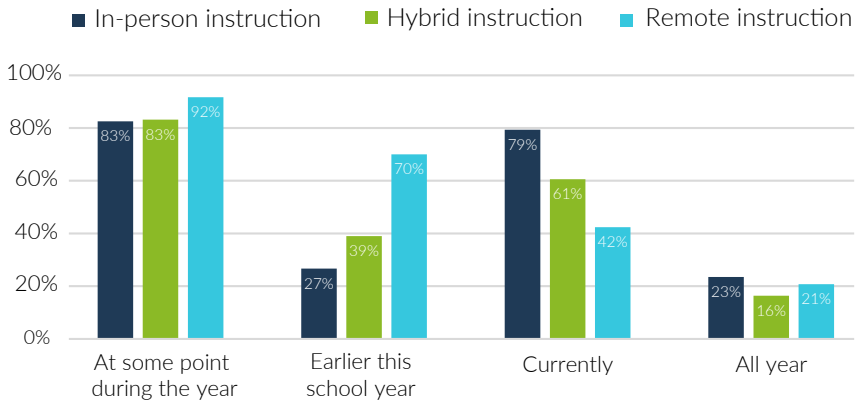
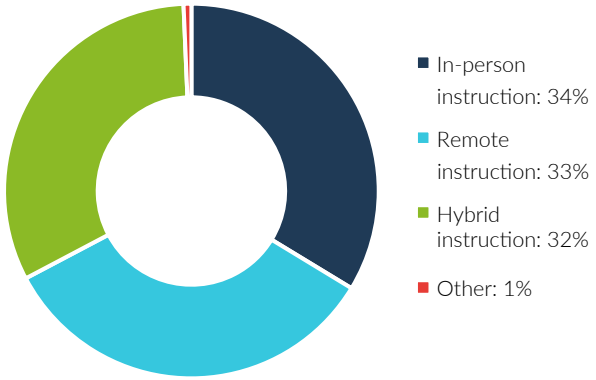


Figure 2B. Arrangements most often used during the 2020-21 school year



Hybrid teaching: Most hybrid teachers taught in-person and remote students at the same time.

There was a common nationwide experience, however, among teachers who taught primarily in hybrid arrangements. Concurrent instruction, in which in-person and remote students participate in the same live lessons (a.k.a. "Zoom in room"), was by far the most popular approach to hybrid learning. Close to 80% of hybrid teachers reported using this arrangement, compared to just 15% who used a split modality arrangement and 13% who used a split schedule arrangement (see Figure 3).[8]

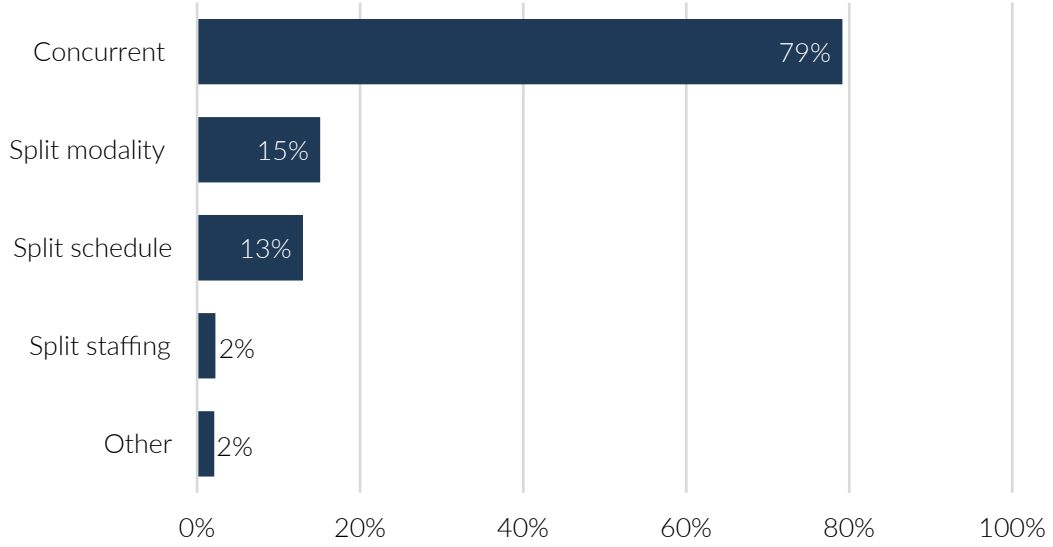
Teachers appeared to find concurrent instruction to be a difficult experience. In an open-ended survey item, teachers voiced frustration with the difficulty of working with in-person and remote students simultaneously:

- "I can deal with in-person learning, I can deal with remote learning, but hybrid learning is the absolute worst. It is two jobs at the same time and it meets no one's needs."
- "Teaching in-person and remote simultaneously is not ideal for students or teachers. I have made it work, but the amount of effort that is required is very draining day to day."
- "I couldn't really design lessons that were good for online learning or in-person learning. I just had to figure out lessons that could happen for both. So I felt like I was failing everyone all the time."

During the pandemic, some K–12 circles have seen hybrid instruction as synonymous with blended learning.[9] It's worth noting, however, a clear contrast between the concurrent hybrid arrangements documented by our survey and the blended-learning models that the Christensen Institute has studied over the last decade. Both concurrent instruction and blended learning involve integrating online learning with instruction at a brick-and-mortar location. But from there, these instructional arrangements start to diverge. In blended learning, students' online learning experiences offer them some element of control over the time, place, path, or pace of their learning. By contrast, concurrent hybrid instruction affords none of that control. In blended-learning models, online learning generally helps teachers to differentiate and personalize instruction, provides students with greater flexibility, and shifts the focus of class time from covering content

to coaching students as they apply new content. In contrast, concurrent hybrid arrangements use online learning primarily to transmit conventional classroom instruction over the internet. Given these important differences in structure and purpose, concurrent hybrid instruction and other blended-learning models aren't equivalent.

Figure 3. Teachers' use of hybrid models



Hybrid schedules: Many teachers' students came to school on alternating weekdays, but some students stayed home.

Many hybrid teachers indicated that their students came to school on a schedule (e.g., on alternating times, days, or weeks). But the most common student arrangement, selected by over 70% of hybrid teachers, was to have some students remote full time, while others were in person full time. We suspect, however, that having students in person or remotely all the time was the exception rather than the rule, because 45% of teachers who picked this option also picked one of the other hybrid student arrangements. Based on our conversations with teachers, it seems that many schools used a schedule for determining when students came to their school buildings for in-person instruction, but also allowed students and their families the option of continuing to receive full-time, remote instruction if they didn't feel safe returning to school.[10]

Hybrid models

Concurrent:

Teaching live lessons to in-person students and remote students over video simultaneously.

Split modality:

Teaching live lessons only with in-person students and assigning independent learning activities to remote students.

Split schedule:

Teaching in-person for part of the day and live over video to remote students for part of the day.

Split staffing:

Having different teachers specialize in either in-person or remote teaching.

Hybrid student arrangements

Designating students:
Some students learn in person full time while others are remote full time

Alternating days:
Students learn in person on alternating days of the week (e.g., some Mon/Wed and others Tue/Thu).

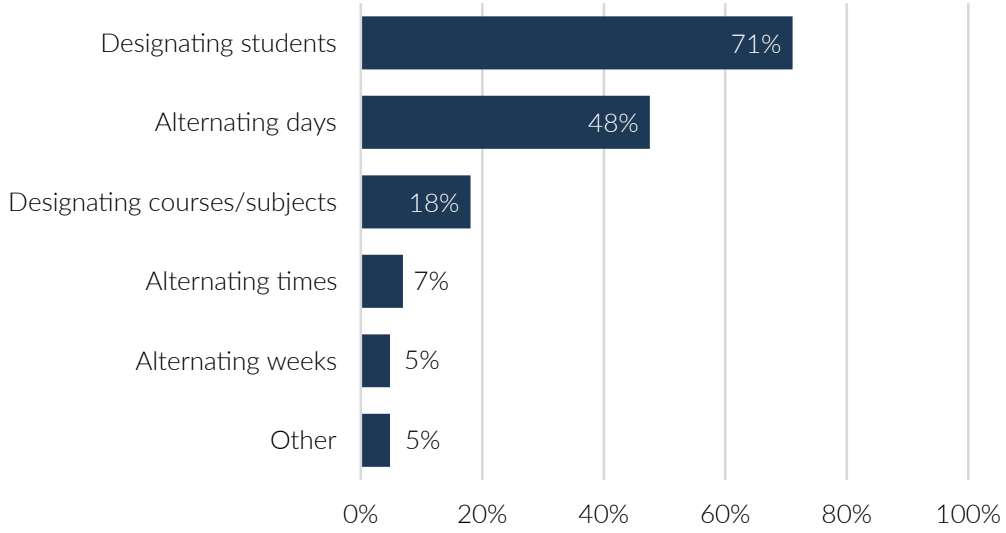
Designating courses/subjects:
Students take some of their courses/ subjects in person and others remotely.

Alternating times:
Students learn in person at alternating times each day (e.g., some AM and others PM).

Alternating weeks:
Students learn in person on alternating weeks.

Teachers reported major difficulties maintaining student engagement during the remote parts of hybrid instruction. As one teacher put it, "Keeping my online students engaged has been the biggest struggle. They do not participate or even turn on their cameras for the most part. I feel like I am teaching to the void at times." The discretion school systems gave students in deciding how to participate also posed a major challenge for many teachers. As one teacher explained: "It was very hard to hold students accountable if we were always supposed to give the students the benefit of the doubt as to why there was no evidence of learning."

Figure 4. Hybrid student arrangements

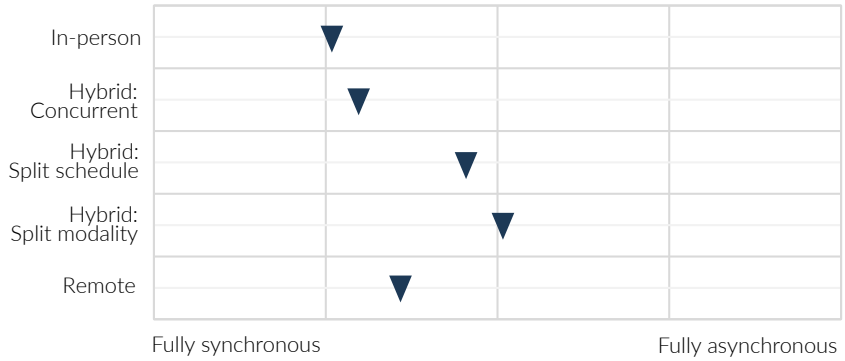


Flexible learning: Most instruction was synchronous with uniform pacing, but some hybrid models offered more flexibility.

One hallmark of online learning is flexibility—enabling variation in the time, place, path, and pace of students' learning. When the pandemic closed school buildings, schools gravitated to online learning because its place-based flexibility made remote instruction possible. Yet, by and large, remote instruction during COVID-19 has left the other flexibilities afforded by online learning—time, path, and pace—on the table.

One survey question drilled down on flexibility in timing by asking teachers to use a horizontal slider to indicate their balance of synchronous and asynchronous instruction (see Figure 5A). In general, teachers' responses matched what one would expect based on the instructional models they were using: those working in person and in concurrent hybrid arrangements (which gave them the same amount of face-to-face contact with their students as a conventional school day) relied primarily on synchronous instruction. In contrast, teachers using split schedule and split modality hybrid arrangements (in which their daily or weekly schedules divide their face-to-face time among different groups of students) tended to have a relatively even split between synchronous and asynchronous instruction.

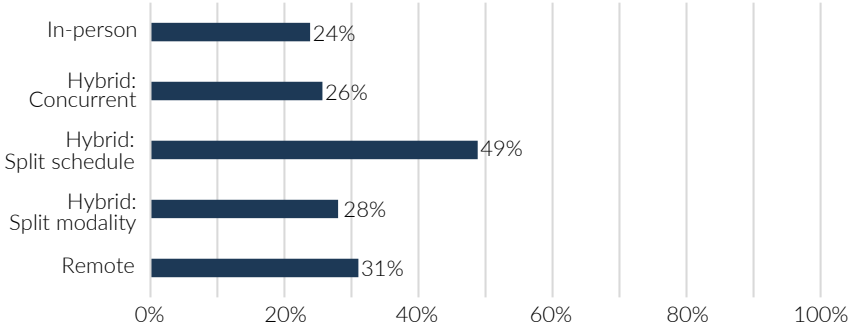
Figure 5A. Average balance of synchronous and synchronous instruction



Another survey question investigated flexibility in pacing by asking teachers to pick from a list of options to indicate how much they let their students move at their own pace through class content (see Figure 5B). Across the various teaching arrangements, only about a quarter of teachers said they allowed their students to progress at their own pace within each unit of study. But one hybrid model stood out from the pack when it came to individualized pacing: roughly half of the teachers using a split schedule model (in which they teach in-person and remote students separately each day) indicated that they let their students progress at different paces within a unit. This makes sense, given that the split schedule arrangement involves more asynchronous instruction by design, and asynchronous instruction supports greater flexibility in pacing.

In highlighting the arrangements that allowed for more flexible pacing, we want to note that our survey data cannot distinguish effective implementation of flexible pacing from ineffective implementation. Nonetheless, how teachers implement flexible pacing matters a great deal.[11] When executed poorly, flexible pacing carries the risk of enabling students to procrastinate and fall behind on their work more easily. But when done well, it allows students to spend more time on difficult-to-understand topics and skills, move quickly through content that comes easily to them, and more easily catch up on content they may have missed.

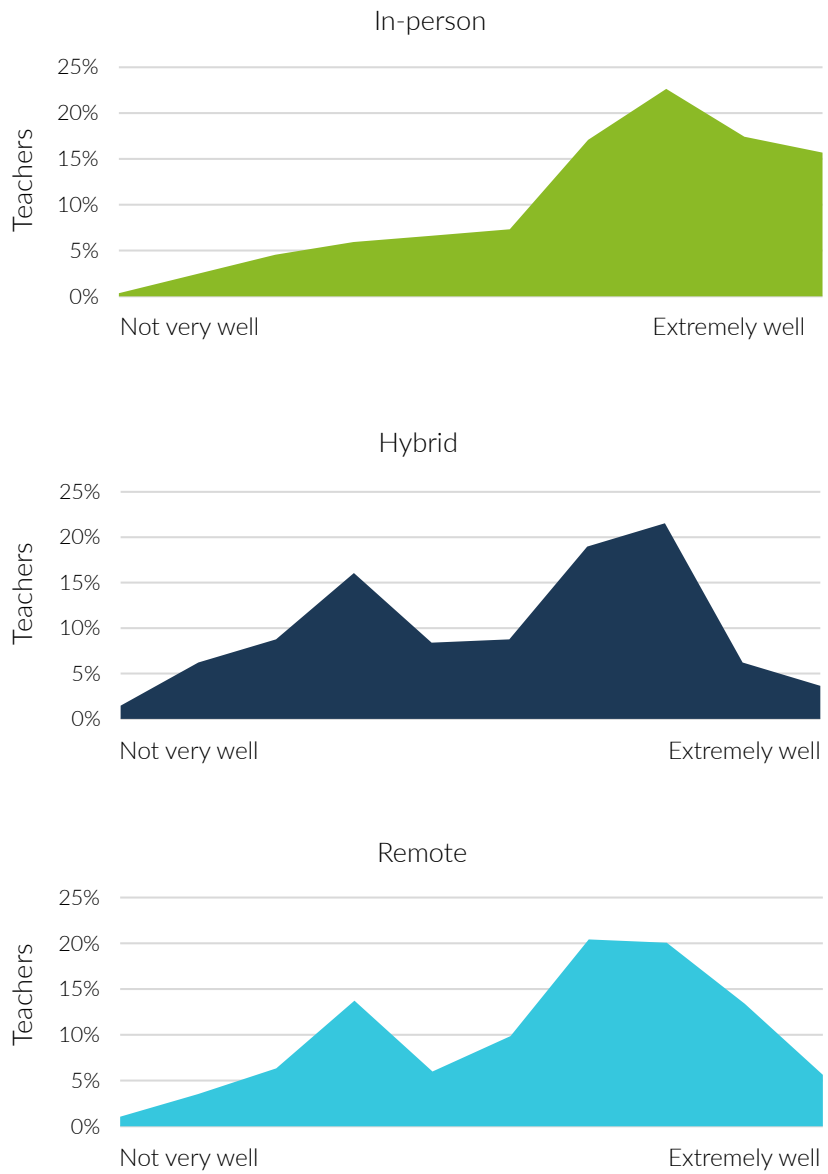
Figure 5B. Proportion of teachers allowing variable pacing within a unit



Effective instruction: In-person teachers had an okay year. Remote and hybrid teachers were split.

In addition to capturing a snapshot of what instruction looked like last school year, we also gauged teachers' perceptions of how the year went. Survey responses on this front painted a telling, if not surprising, picture: On one hand, teachers who taught primarily in person during the 2020-21 school year—about a third of all teachers surveyed—felt fairly confident that the year went well. Remote and hybrid teachers, on the other hand, had mixed opinions.

Figure 6A. Teachers' perceptions of their ability to provide effective instruction during the 2020-21 school year



One survey question gauged teachers' sense of how well they were able to provide effective instruction by asking them to place a horizontal slider somewhere between "not very well" and "extremely well" (see Figure 6A). Responses from in-person teachers clustered toward the "extremely well" end of the scale. Responses from hybrid and remote teachers were bimodal: a sizable proportion clustered toward the "extremely well" end of the scale, while a smaller, but still sizable, proportion clustered toward the "not very well" end of the scale.[12] It's also worth noting that among the hybrid and remote teachers who felt more confident in their instruction, few gave ratings at the highest ends of the scale, unlike their peers who taught mostly in person.

Why did remote and hybrid teachers generally feel less able to provide effective instruction? One reason, noted above, was the challenge of working with online and in-person students simultaneously. Additionally, few teachers had prior experience teaching in remote or hybrid arrangements. Considering these circumstances, it's understandable why many teachers said their workload during the 2020-21 school year felt unsustainable:

- "The amount of time and effort it takes to teach remotely or to teach hybrid—especially for elementary teachers—is just not sustainable."
- "Teaching has always had a workload that went beyond the amount of hours in the week. Teaching during this pandemic has essentially doubled the workload."
- "I am terrified, as a veteran teacher (16 years), that the expectations placed on us as teachers during this time will continue post-pandemic. We cannot continue in this manner—too much to plan/do/create/etc., with no time in which to do it, much less do it effectively."

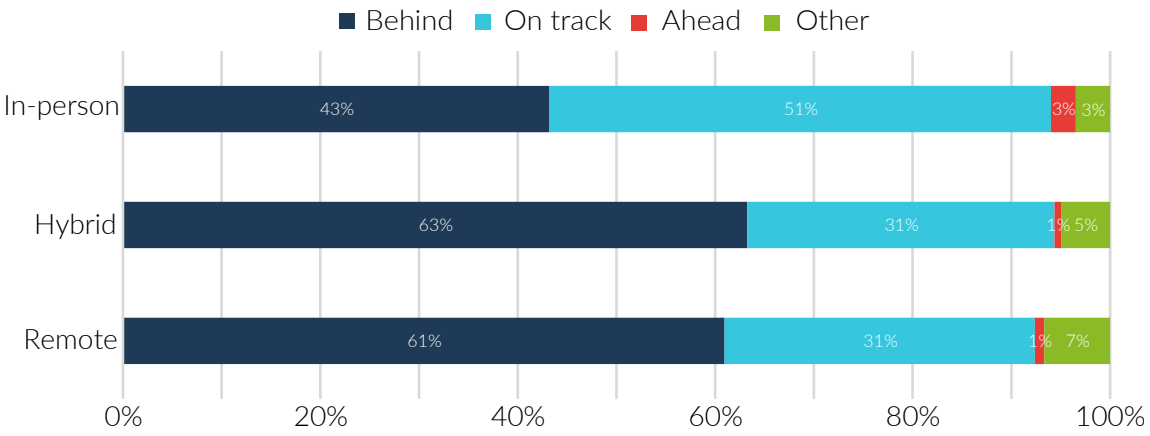
Another survey question asked teachers whether they perceived their students' average learning growth to be behind, on track, ahead, or "other" when compared to a typical year (see Figure 6B). Across all three instructional arrangements, the proportion of teachers who rated their students' learning as "ahead" was near zero—a telling sign of a challenging year. Among in-person teachers, more than half indicated that their students were at least "on track." In contrast, close to two-thirds of hybrid and remote teachers indicated that their students were "behind"—

another sign that effective instruction in hybrid and remote settings was harder to achieve than in in-person settings.

In the free response survey items, some teachers suggested that students' circumstances shaped the pandemic's impact on their learning. As one teacher elaborated, "I feel that [English as a Second Language] and [Special Education] students have been left way behind in online learning." In other cases, online learning seemed to benefit certain students. As one teacher explained, "Teen parents who normally would not have the opportunity to continue their education have been given the opportunity to continue their studies with the new adaptation of remote instruction." Another teacher noted, "I think there are many students that do much better remotely, and I think it should continue to be an option for them." In line with these comments, many of the teachers who described their students' average learning growth as "other" noted in their responses that students fell into two categories: some who successfully made the progress they would have made in a typical year, and some who fell behind due to different levels of motivation, different propensities for self-directed learning, or different levels of support and accountability in their home learning environments. As one teacher put it, "More independent learners thrived, and our struggling learners struggled more with the lack of hands-on practice."

Importantly, we want to note here that teachers' comments about the circumstances that led their students to succeed or struggle with remote and hybrid instruction don't represent universal patterns for remote online learning. For example, some special education students thrive with remote learning.[13] Additionally, high-quality virtual schools successfully support many types of students, not just those who come into the school as independent learners.

Figure 6B. Teachers' perceptions of their students' average learning growth in 2020-21 compared to a typical year

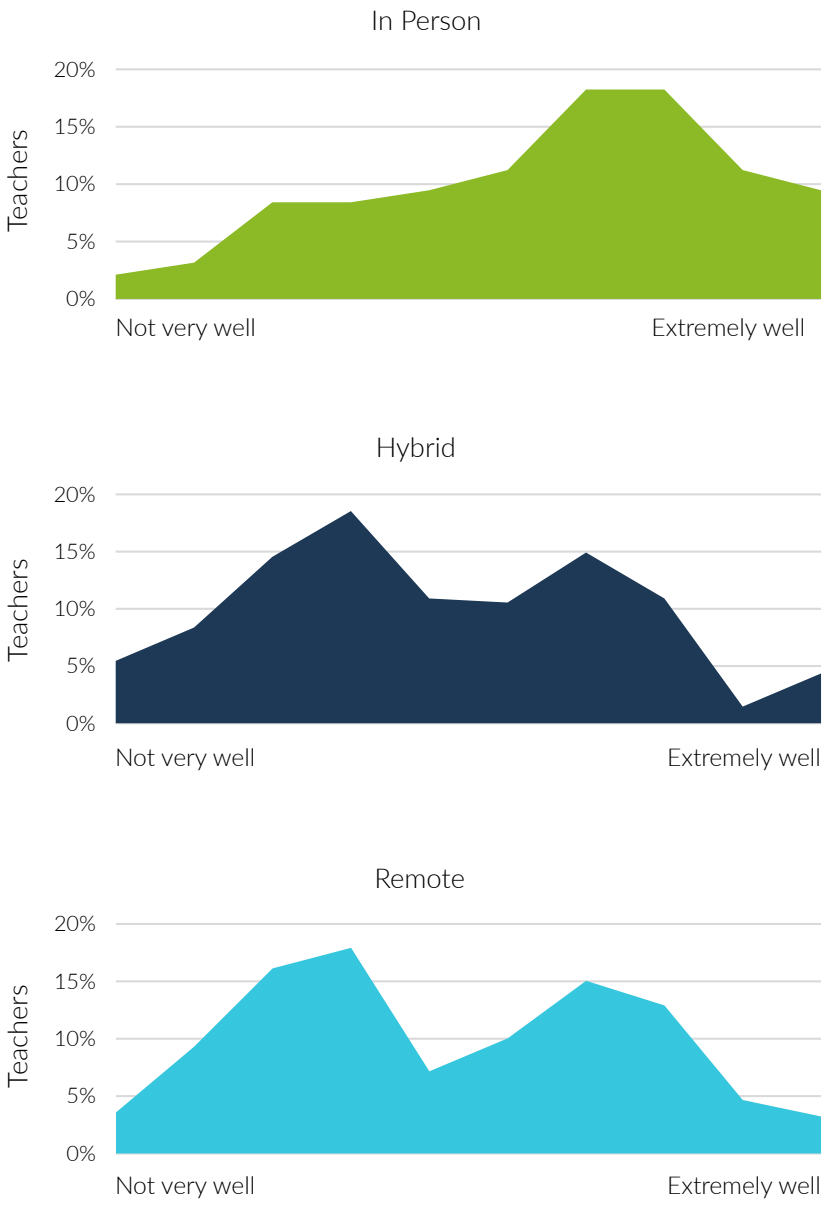


Social and emotional support: In-person teachers felt more effective. Remote and hybrid teachers had mixed perspectives.

Typically, a teacher's primary role is to provide academic instruction, but teachers often—and perhaps increasingly— attend to their students' social and emotional wellbeing. As such, the survey asked teachers how well they were able to support students' social-emotional needs during the 2020-21 school year by placing a horizontal slider somewhere between "not very well" and "extremely well" (see Figure 7). The overall pattern of responses to this question mirrored teachers' feelings about providing effective instruction: in-person teachers mostly felt they'd been able to meet students' social-emotional needs, whereas results for hybrid and remote teachers were bimodal, with more teachers on the "not very well" side.[14] And in general, even for in-person teachers, responses to this question tended to skew more toward "not very well" compared to the results for effective instruction.

Teachers' comments pointed to some noteworthy differences in approach that might underlie the very different perceptions of how well they met their students' social-emotional needs. For some teachers, if their primary contact with their students came from whole-class video calls, it was hard to build relationships—especially if students chose to keep their cameras off. Consider one teacher's comments: "Distance learning is what we had to do, but it's a poor substitute for in-person teaching/learning and building relationships to support our students." Yet, teachers who took advantage of online learning to personalize instruction for their students seemed to have had very different experiences. "We were able to communicate more on an individual basis with students and differentiate their learning needs and instruction better. …My perception is that we were better able to engage students due to the ability to differentiate lessons and learning, as well as the fact that so little time had to be spent on behavior and conflict resolution." Some teachers' comments revealed that, although remote learning often made instruction more challenging, it sometimes made classroom management a lot easier. "Remote learning has eliminated bullying, managing student behaviors, and has increased the quality of the curriculum I was able to offer. Students were performing better and treating one another with respect and kindness."

Figure 7. Teachers' perceptions of how well they've been able to meet their students' social-emotional needs



PART 2: THE FUTURE OF INNOVATIVE PROGRAMS AND PRACTICES

How will the 2020-21 school year affect the use of online learning going forward? How will the unprecedented circumstances of the last year shape the future of student-centered instructional models enabled by online learning? Given the mainstream narratives and our own survey data about how pandemic learning played out last year, one might expect most educators to be soured toward online learning. However, findings in this section suggest otherwise. Our survey data on teachers' and administrators' plans for the future give a glimpse into what to expect going forward.

Online learning: Learning management systems are now mainstream, and tools for creating online lessons gained new ground.

During the pandemic, necessity drove teachers to learn about many online resources they might never have explored otherwise. But now the question arises as to whether teachers will keep the resources they've discovered or set them aside once conventional in-person classroom learning becomes the norm again.

In the surveys, we asked teachers and administrators about their past, current, and future uses of online learning resources. Unsurprisingly, teachers and administrators reported that they plan to use online learning resources less after the pandemic than they used them in spring 2021, at the time of the survey in the middle of the pandemic. But in most cases, they also planned to use online learning resources more after the pandemic than they originally did before COVID-19 began (see Figures 8A and 8B). Some of the biggest pre- to post-pandemic gains among teachers will be for technologies used for managing online assignments (14% gain), live instruction over video (16% gain), recording lessons as online videos (16% gain) and creating online lessons (19% gain).[15]

It's also interesting to note some of the differences between teachers' and administrators' adoption of different online learning resources. The adoption trends across our two groups of survey respondents closely mirror one another. But administrators generally reported higher usage of online resources than teachers. We suspect this may be because administrators reported using an online resource if most (but not all) of their schools and teachers would use it, whereas teachers only responded positively if they themselves used the resource in question.

Online learning resources for monitoring students' learning progress revealed the most striking differences between administrator adoption and teacher adoption. Whereas 58% of administrators plan to use these resources post-pandemic, only 30% of teachers hold the same opinion. We suspect that this difference stems from how teachers gauge their students' progress primarily through their observations while working with students, whereas administrators who don't work as closely with students rely more on assessment data to monitor student learning.

> Teachers and administrators reported that they plan to use online learning resources more after the pandemic that they did before COVID-19 began.

Figure 8A. Teachers' use of online instructional resources pre-, during, and post-pandemic

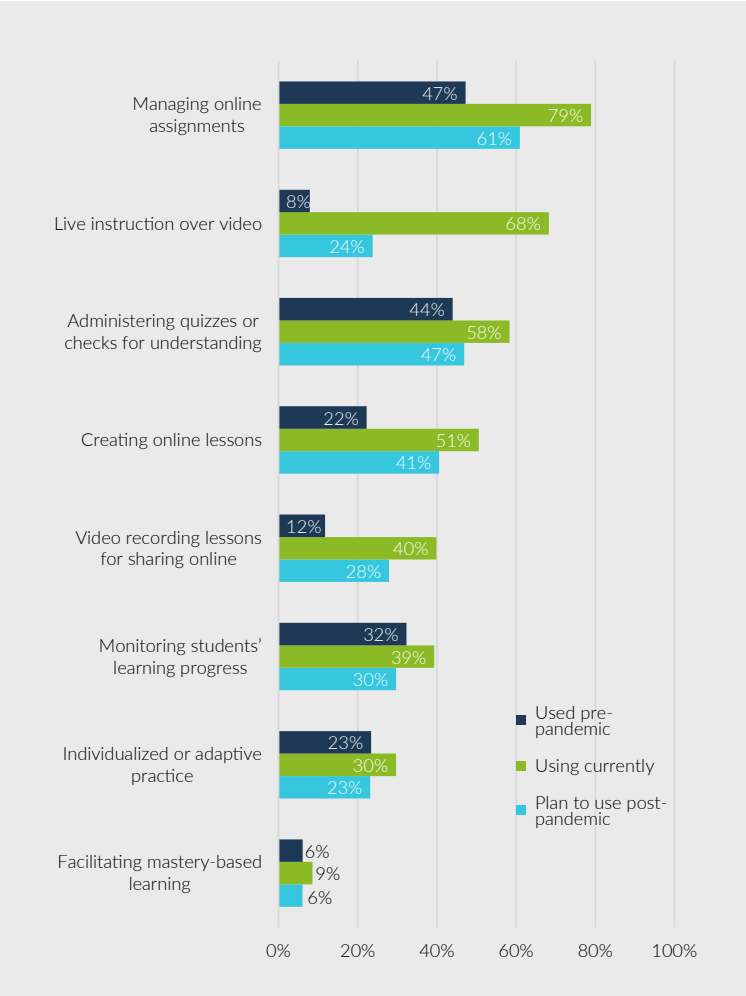
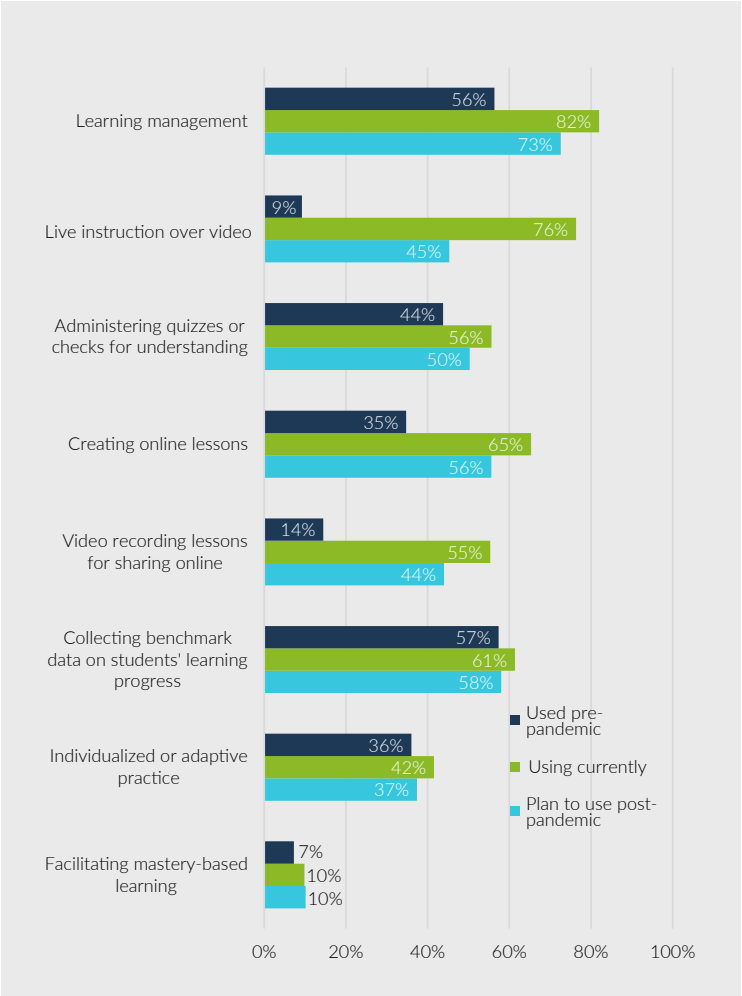


Figure 8B. School systems' use of online instructional resources pre-, during, and post-pandemic



Station Rotation:

Students rotate through stations on a fixed schedule; at least one station is online learning.

Flipped Classroom:

Students receive online learning assignments that cover class content for homework; in-person instruction is used for discussions, projects, practice problems, etc.

Individual Rotation:

Students rotate between online learning and other activities on a fixed schedule; activities in each student's schedule are customized based on individual needs.

Flex:

Students decide for themselves which individual learning activities to work on during class; group learning activities (such as small-group instruction, collaboration with peers, etc.) are coordinated based on students' needs.

Lab Rotation:

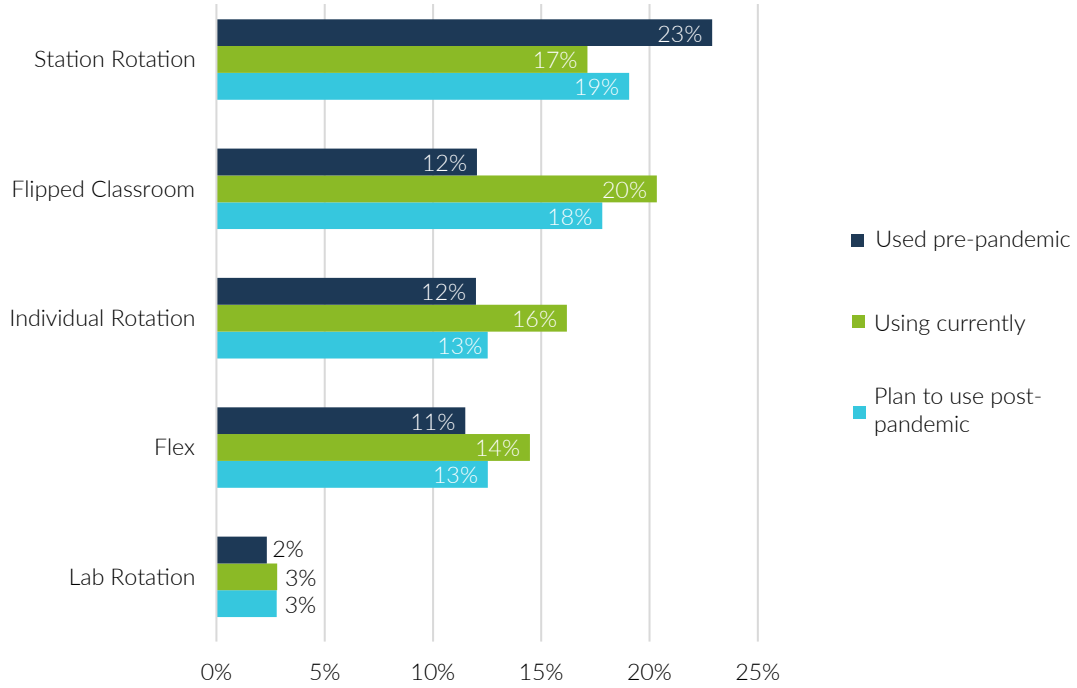
Students rotate between teacher-led instruction in class and online learning in a separate room designated for computer-based learning.

Blended learning: COVID-19 will boost the overall use of blended learning post-pandemic.

Online learning implemented during the pandemic often served merely to enhance teachers' conventional instructional practices. However, when used to enable blended-learning models, online learning resources can create flexibility in the time, place, path, and pace of learning for students.[16] They can also expand teachers' capacity to orchestrate deep learning experiences and develop more personal relationships with their students. For these reasons, we're interested in observing the pandemic's impact not only on the adoption of online learning resources, but also on the implementation of blended-learning models.

To gauge blended-learning adoption, we asked teachers who taught mostly in hybrid or in-person arrangements about their uses of specific blended-learning models at various points in time (see Figure 9).[17] Their responses reveal a rising tide.

Figure 9. Teachers' use of each blended-learning model pre-, during, and post-pandemic



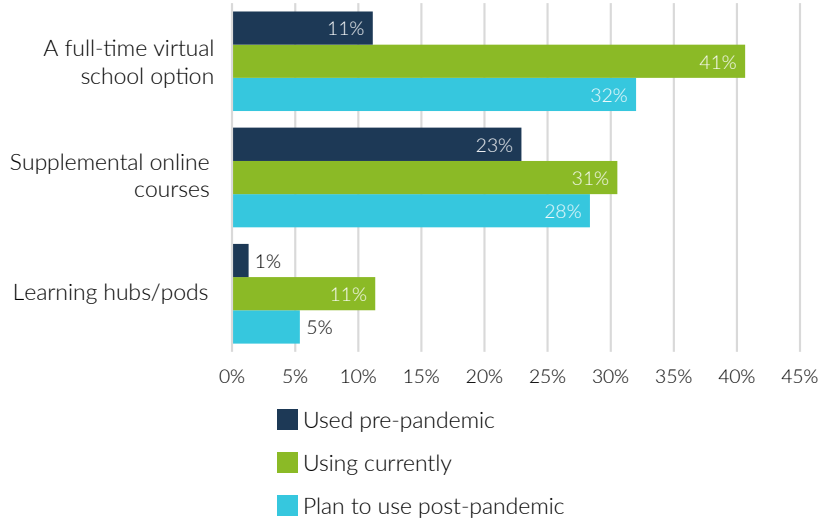
During the pandemic, the Flipped Classroom model grew in popularity more than any other model. In this model, students learn core content outside of class using online learning materials (such as teacher-created videos). Teachers then focus in-person instructional time on learning activities in which students apply what they learn, such as practice problems, discussions, and projects. Not only did a noteworthy proportion of teachers adopt the Flipped Classroom model during the pandemic, but the majority of those using it at the end of the 2020-21 school year plan to stick with it. In follow-up interviews and open-ended responses, many teachers who began using the Flipped Classroom model saw it as a powerful way to support absent students, adapt instruction to students' needs and circumstances, and focus more class time on giving their students individualized support.

The Individual Rotation and Flex models also showed slight gains. These models expand on the Flipped Classroom experience by making online learning the backbone of the instructional model and allowing students to work through course content following individualized pacing and pathways. We suspect that these models gained less traction than the Flipped Classroom model, however, because they are more complicated to implement. Station Rotation—by far the most widely used of all the blended-learning models pre-pandemic—is the one model that shows declining use during the pandemic and less use post-pandemic than pre-pandemic. Rather than replace teacher-led instruction with online learning, this model has students rotate in groups between teacher-led instruction and supplemental online learning activities.

New schooling options: A third of districts intend to offer a full-time virtual school post-pandemic, and some plan to maintain learning hubs.

Responses to our administrator survey revealed a major jump in the adoption of full-time virtual schools, continued growth in the availability of supplemental online courses, and some persistence in learning hubs and pods (see Figure 10). These programs were far from being the norm pre-pandemic: each had only a minority of administrators indicating their use, and we suspect that even where these programs were available, only a subset of a school system's students utilized them. Nonetheless, at their peak rates during the pandemic, these programs saw between four times and ten times growth in adoption by school systems compared to their pre-pandemic levels.

Figure 10: School systems' use of new schooling options pre-, during, and post-pandemic



Virtual schools are full-time schools designed to provide all instruction online. Whereas most remote learning programs last year were set up as emergency measures by brick-and-mortar schools in response to the pandemic, virtual school models have been around for decades. They generally use curriculum designed for online learning, instruct students through both synchronous class sessions and asynchronous learning activities, and train their teachers in pedagogical practices specific to online learning. We'll be eager to see the extent to which virtual school adoption persists, not only in the next school year, but in the years that follow. Actual adoption going forward may be lower than projected in our survey results, since some states are prohibiting virtual options in an effort to return to "normal."[18] It's also possible that some school systems adopted virtual schools as a stop-gap solution for families that are uncomfortable returning to in-person instruction in fall 2021, and not as long-term solutions for families that have come to prefer virtual schooling options.[19]

Learning hubs and pods represent a new model of schooling that sprang up in response to the pandemic. In these arrangements, small groups of students gather for in-person interaction and learning support, often while participating in distance learning classes offered by their brick-and-mortar schools. Pods are generally organized by families and gather in students' homes, whereas most hubs are organized by a school system or community organizations in the school's area (such as municipal governments, libraries, or the Boys & Girls Club) and gather at facilities provided by the hub organizer. Only 11% of administrators reported that their school systems supported learning hubs or pods during the pandemic, and that number is expected to drop by more than half once the pandemic ends. However, most administrators who indicated that learning hubs and pods were available in their school systems also indicated in follow-up survey items that those learning hubs and pods were offered at school sites and organized by school system staff. Our data, therefore, likely underreports learning hubs and pods organized and operated by families, municipalities, or community organizations independent from local school systems.[20] Despite relatively low adoption by school systems so far, pods and hubs offer schools compelling models for student-centered education by combining the flexibility of online learning with face-to-face support in community-oriented settings. Some hubs have even shown remarkable results in improving students' learning outcomes.[21] But as conventional schools reopen, it's unclear whether school systems will continue supporting hubs and pods.

Pods and hubs combine the flexibility of online learning with face-to-face support in community oriented settings.

PART 3: BENDING THE ARC OF INNOVATION TOWARD STUDENT-CENTERED LEARNING

Unfortunately, the COVID-19 pandemic is not yet in the rearview mirror. The spread of the delta variant and the lack of vaccine approval for children under 12 may necessitate remote and hybrid learning options in the 2021-22 school year, and the pandemic's impact on students' learning progress last year remains a challenge going forward.[22]

Meanwhile, families want new approaches to education. Fifty-one percent of parents surveyed by the National Parents Union in June 2021 indicated that they think schools should be "rethinking how we educate students, coming up with new ways to teach children moving forward as a result of the COVID-19 crisis."[23] And although most parents would prefer to have their children learn next year in person on their school's campus, 19% want their children to learn remotely or online and 22% want hybrid learning options.[24] Recent reports suggest that some parents found remote and hybrid instruction to work better for their children than conventional schooling.[25]

Given these realities, the time is ripe for school systems to invest in student-centered learning options. Conventional instruction operates on an assumption that effective learning can happen for all students on a uniform schedule: students attend school at the same times on the same days and participate in the same lessons at the same pace as the rest of their classmates. The problem with this one-size-fits-all approach is that it rarely fits individual students' needs. Even before the pandemic, students arrived in K–12 classrooms with different background knowledge, cultural and linguistic identities, family resources, parent education levels, personality traits, natural aptitudes, interests, developmental challenges, and past trauma. School systems that only make minor accommodations for these variations will inevitably frustrate many and leave some behind. K–12 students deserve schools and instructional models that can better personalize learning experiences to meet their individual learning needs and nurture their unique potential. And school systems' abilities to effectively address COVID-created learning gaps will hinge on how well they can meet students where they're at and put each student on an individual path to success.[26]

Below, we offer three general strategies school systems can pursue to leverage the new technologies, programs, and practices they've implemented during the pandemic to move toward more student-centered instruction.

Strategy 1: Empower teachers to make their classrooms more student-centered.

Survey responses signaled a positive shift in the types of online learning resources teachers value. Results indicated that before the pandemic, the most popular online learning resources were those that proved most compatible with conventional teaching. For example, learning management systems and apps for administering quizzes helped facilitate and streamline activities teachers were already doing. In contrast, tools for creating online lessons were far less popular pre-pandemic, likely because online lessons were an unnecessary and time-demanding redundancy for most teachers. But when the pandemic forced teachers online, teachers began to discover tools with the potential to make lessons more engaging and support students who missed class.

Now that many teachers have put in the time and effort to learn how to create online lesson materials, these resources can continue to pay dividends even after the pandemic ends. Consider a few examples from teachers who completed our survey:

- "Many of the online strategies we have learned throughout the year have enhanced our teaching program…We would like to continue using hybrid learning."
- "I prefer to teach in person; however, I plan to use exactly what I have developed and used this year, only refine it more… [My students] learn from videos I make and then when doing the independent work, I am there to help them as needed. This year my students are all on different problems, different assignments, and they have been more independent than I have ever had students be in the classroom, and they LIKE it this way. They don't want to all have to be on the same problem at the same time … those who are ready can go ahead and those who need extra help and to go slower can do so without feeling pressured."
- "[I'm] thrilled to get back to in-person AND I will keep recording classes for sick students so I don't have to repeat everything to those who were absent. I will ALSO keep homework assignments electronically turned in. NO more excuses about where their work went!"
- "I have been making videos…to help my students. These videos help explain the content and allow them to learn at any point during the day even outside of class hours."
- Shifts to student-centered learning don't have to happen as school-wide change management initiatives. We've seen many noteworthy examples of teachers who have developed student-centered practices in their classrooms to align directly with the needs of their students. These teachers benefit from having resources and support for their efforts. School system leaders should focus on creating enabling conditions to empower teachers to make the shift, rather than forcing all teachers to adopt new models that will inevitably get compromised by those who drag their feet.[27]

A teacher's newfound familiarity with the tools for facilitating online instruction can provide footholds along the climb to student-centered practices. Once teachers learn how to create online lessons, quizzes, and assignments, it's an incremental step to start making lessons available online for students who are absent or may benefit from accessing the content multiple times. And once teachers develop a library of online lessons available on demand, it's another small step to adopt a Flipped Classroom model: focusing in-person time on discussions, practice problems, or collaboration on projects while directing students to learn basic foundational content independently, either during or outside of class.[28] Furthermore, once lessons are available online for on-demand access, it becomes feasible to move toward a Flex model: allowing students to move through units of content in a self-directed way, and progress at their own pace by demonstrating mastery of learning objectives. With these instructional models in place, teachers can enjoy spending more time where they're needed the most—building relationships with students, identifying students' learning needs, providing individualized support, sharing their passion for the content they teach, and orchestrating deeper learning experiences.

Candidly, all these transitional steps in a teacher's journey toward student-centered practices will likely happen over the course of a few years, not a few weeks or months. Building quality online resources for each area of course content is a major undertaking. The resources teachers created over the last year give them a leg up on this work, but teachers likely have more work ahead to migrate all their lessons online. Strategically implementing instructional models that hinge on self-paced, mastery-based learning requires creativity and iteration. Coaching students from being passive recipients of instruction to active, self-directed learners is perhaps one of the most difficult parts of a student-centered transition. And getting parent buy-in for unconventional teaching practices can take time. But the pay-off can be significant in terms of learning progress as well as students' and teachers' experiences.

It's important to note that online learning resources themselves are not inherently student-centered. Without a vision for student-centered instruction guiding a teacher's efforts, online learning resources can turn into mere enhancements to conventional instruction. These tech-rich enhancements may streamline teachers' workflows and engage students through multimedia, but they do little to break the mold of whole-class, teacher-led instruction.

Nonetheless, teachers with the right tools and supports can successfully make incremental changes add up to major transitions toward student-centered learning. We encourage teachers and school system leaders to evaluate the online resources they adopted during the pandemic and continue using those with the most promise to enable shifts toward more student-centered practices.

Strategy 2: Help schools make bold shifts to student-centered learning

Even with the current demand from some families for new approaches to schooling and the clear benefit of student-centered learning to help schools address the challenges facing them, bold shifts toward more student-centered practices are no easy matter for existing schools. As staggering as COVID-19's impact on K–12 schools has been, it's unlikely to trigger the overnight transformation of K–12 education that some have predicted and hoped for.[29]

Organizations that help teachers shift to student-centered practices

The Modern Classrooms Project is a nonprofit focused on empowering educators to meet every student's needs through blended, self-paced, and mastery-based instruction. It offers a free online course that walks teachers step-by-step through how to set up these core student-centered practices in their classrooms. School systems can also partner with the Modern Classrooms Project to provide cohorts of teachers with mentorship and coaching.

The Learning Accelerator is a nonprofit that connects "teachers and leaders with the knowledge, tools, and networks they need to transform K–12 education." It offers a set of practical resource guides to ensure quality instruction and student engagement in remote and hybrid learning settings.

The Learner-Centered Collaborative is a nonprofit that partners with educators to "define whole-learner outcomes, design meaningful learning experiences, and create the enabling conditions for their unique journey to inclusive and equitable learner-centered education." It offers one-day and multi-session workshops to help teachers deepen their learner-centered pedagogical practices.

The widespread adoption of the concurrent hybrid (or "Zoom-in-room") model offers a telling example of why school systems often find it difficult to make major shifts toward student-centered learning. Teachers' comments in the survey made clear that the concurrent model was hard to manage. But schools seem to have chosen the concurrent arrangement because, of all the models of hybrid instruction, it was the easiest to plug into conventional schedules, class rosters, curriculum, and instructional models. The concurrent hybrid model worked well as a way for school systems to adapt and pivot on short notice—but that doesn't mean it was a good model for effective instruction and student engagement.

This example illustrates a general pattern that often proves a barrier to K–12 innovation: established processes, rules, norms, and stakeholder expectations force innovations to accommodate the needs of the system, often at the cost of better serving the needs of students. First, conventional practices evolved to solve real challenges. Stepping away from convention can turn nonissues into new issues needing to be solved. Second, conventional practices are often highly interdependent. Drastically changing one set of practices often requires developing many new practices at once. Third, innovation can be an uncertain and risky endeavor, leading many school leaders to opt for pre-existing solutions rather than trying bold innovations with less certain track records. Fourth, many families and teachers still expect schooling to fit the conventional norm. These stakeholders will push back if school starts to look different from what they expect it to be. For these reasons, it's prudent to temper expectations for how much and how quickly existing schools will transform themselves in response to COVID-19.

Nonetheless, K–12 innovation during and after COVID-19 is still possible. With a transformative vision and the support of enabling technology, some school systems have successfully tackled change initiatives that are larger in scope. For example, over the course of a decade, the Lindsay Unified School District's leaders rallied their community around the need for bold new solutions to address long standing systemic failures. They then shifted their schools to blended, mastery-based instructional models that foster students' agency, adapt to students' learning needs, and nurture students' interests and passions.[30] Similarly, with a clear charge from their school board, the leaders of the Kettle Moraine School District in Wisconsin developed a vision for student-centered learning called "Learning Without Boundaries." Guided by this vision, the district developed systems and practices that leverage online learning to help teachers identify students' learning needs and personalize learning experiences.[31] Both Lindsay and Kettle Moraine stand out as two school systems that made dramatic shifts toward student-centered learning years ahead of the pandemic.

For some school systems, the pandemic may be the catalyst that tips the scales toward innovative progress. At this moment, as conventional instruction strains under remote and hybrid learning arrangements, some leaders may seize this rare opportunity to call out the shortcomings of conventional instruction and rally their staff and communities around a student-centered vision for education. Stakeholder receptivity to that vision will vary from one school system to the next, depending on circumstances such as how much people are dissatisfied with conventional instruction, the degree to which flexibility and growth mindset are already part of the school system's culture, and the trust that leaders have established with their faculty, staff, and community.[32] If a school system's current circumstances provide enough wind in its sails, leaders have an opportunity to define a new student-centered vision and then guide their stakeholders toward the innovative models and practices for accomplishing that vision.[33]

As conventional instruction strains, some leaders may seize this rare opportunity to rally their staff and communities around a student-centered vision for education.

Organizations that help school systems shift to student-centered practices

The Learner-Centered Collaborative is a nonprofit that partners with schools and districts on single-day to multi-year engagements that help them build on their current strengths to advance learner-centered education.

Education Elements is a company that helps schools and districts with a range of services related to student-centered learning, such as implementing competency-based education, adopting student-centered curriculum, developing personalized learning strategies, and designing new instructional models.

The Highlander Institute is a nonprofit that partners with schools and districts to help them create student-centered, personalized learning environments.

The Learning Accelerator created its "Hop, Skip, Leapfrog" guide to provide concrete ways schools and systems can pursue student-centered innovation during COVID-19.

Transcend is a nonprofit that "supports communities to create and spread extraordinary, equitable learning environments." It offers school systems a number of resources to help them shift to student-centered learning during COVID-19, including a playbook of guidance and tools, a library of school designs and resources, and a national design community of schools across the country.

Strategy 3: Invent new student-centered programs by pairing virtual schools and supplemental online courses with learning hubs.

Although some school systems and leaders may be ready to tackle a new, bold vision for student-centered education, many will find extensive changes beyond their current reach. As noted above, there are powerful forces within school systems that maintain the inertia of the status quo even when leaders see the need for change. For school systems and leaders in this category, is there a viable path to a more student-centered future?

Fortunately, when remaking instructional models at the core of a school system is untenable, there is an alternative. School system leaders can launch student-centered innovation outside their existing schools through virtual school programs, supplemental online course options, and learning hubs or pods they may have created during the 2020-21 school year. These new programs benefit from not having organizational histories that wed them to entrenched processes. They also don't have stakeholders who expect them to offer something just like conventional schooling; instead, these stakeholders want something different and are willing to let go of some of the typical features of school. In other words, they offer blank slates for designing student-centered learning from the ground up.

Virtual schools and supplemental online courses, when paired with learning pods, could be powerful incubators for student-centered learning. On their own, the flexible learning options provided through virtual schools and supplemental online courses serve only a narrow segment of students and families. But when paired with learning hubs and pods, virtual schools and supplemental online course options become hybrid learning options that pair their flexibility with the custodial care, in-person learning support, and peer learning communities that many families need and value.[34]

This fall, such programs can help fill the need for flexible learning opportunities for families who don't feel comfortable returning to conventional schools. But even after the pandemic ends, we encourage school systems to continue offering virtual schooling and online course options paired with learning hubs or pods. These programs can be laboratories for incubating whole-school models for student-centered learning.

Organizations that help school systems set up virtual schools and online course offerings

The Digital Learning Collaborative is a membership organization that supports school systems with online and hybrid learning through events, planning guides, and professional learning programs.

Stride is a company that offers school systems a range of resources and services to support online schooling, online courses, online curriculum, and blended learning solutions.

Pearson is a company that helps school systems set up their own online courses and curriculum.

Edgenuity is a company that provides various online course options for school systems.

Edmentum is a company that provides various online course options for school systems.

FLVS Global is nonprofit organization that provides school systems with digital courses, teacher development, and technical support.

CONCLUSION

As K–12 school systems move forward into the 2021-22 school year, they sit at a monumental juncture. On one hand, many families are eager for new schooling options—and the programs, practices, and resources that school systems have adopted during the pandemic provide a noteworthy foundation for pivoting to student-centered learning. At the same time, the inertia of the status quo is strong. Many educators are eager to get back to normal as soon as possible given that they just lived through what was, for many, the most challenging year of their careers.

The limitations and inequities inherent in conventional schooling, as well as the groundswell of demand from families for a new approach, make this key point clear: it's time to seize the moment to nurture and grow more student-centered learning options. Not all education stakeholders may be able to seize the moment in exactly the same way: For some, changes may come incrementally as they encourage cohorts of teachers to build off of the tools and practices they discovered this year to make their classrooms more student-centered. For others, the time and circumstances may be ripe to undertake system-wide transformation efforts. Yet others may find the most promising path forward to be pairing new virtual schools with learning hubs to create hybrid options charged with improving and attracting the interest of schools and families. But the lessons learned since March 2020, combined with a boost in adoption of online learning resources that act as levers for customizing learning at scale, point to one message: carpe diem.

NOTES

1. For example, see Thomas Arnett, "Potential unfulfilled: COVID-19, the rapid adoption of online learning, and what could be unlocked this year," Christensen Institute, June 2021, https://www.christenseninstitute.org/publications/online-learning-potential/.

2. Eric S. Taylor, "New Technology and Teacher Productivity," working paper, January 2018, https://scholar.harvard.edu/files/erictaylor/files/technology-teachers-jan-18.pdf.

3. Kareem Farah and Thomas Arnett, "How Edtech Can Expand What Teachers Do," Edutopia, July 25, 2019, https://www.edutopia.org/article/how-edtech-can-expand-what-teachers-do; Thomas Arnett, "3 stories of how educational technology can improve relationships," Christensen Institute, July 18, 2019, https://www.christenseninstitute.org/blog/3-stories-of-how-educational-technology-can-improve-relationships/; Thomas Arnett, "How to have it both ways: deeper learning and broad content coverage," Christensen Institute, April 22, 2021, https://www.christenseninstitute.org/blog/how-to-have-it-both-ways-deeper-learning-and-broad-content-coverage/.

4. "Blended learning models," Blended Learning Universe, http://www.blendedlearning.org/models/.

5. Michael B. Horn and Heather Staker, *Blended: Using Disruptive Innovation to Improve Schools* (San Francisco: Jossey-Bass, 2015).

6. This report shares insights from our second round of data collection. For insights from our first round of data, collected in Fall 2020, see Thomas Arnett, "Breaking the mold: How a global pandemic unlocks innovation in K–12 instruction," Christensen Institute, January 11, 2021, https://www.christenseninstitute.org/publications/online-learning-survey/. Note that the surveys from each of the two rounds of data collection conducted so far asked substantially different questions. As such, this report does not directly compare the data from each round.

7. Andrew Bacher-Hicks and Joshua Goodman, "The Covid-19 Pandemic Is a Lousy Natural Experiment for Studying the Effects of Online Learning," Education Next 21, no. 3 (Summer 2021), https://www.educationnext.org/covid-19-pandemic-lousy-natural-experiment-for-studying-the-effects-online-learning/.

8. The survey allowed teachers to report that they used more than one hybrid arrangement. As a result, the percentages for this item add up to more than 100%.

9. For example, Larry Ferlazzo, "Blended Learning in the Age of COVID-19," *Education Week*, August 19, 2020, https://www.edweek.org/teaching-learning/opinion-blended-learning-in-the-age-of-covid-19/2020/08.

10. For example, Dan Goldstein, "Schools Are Open, but Many Families Remain Hesitant to Return," *New York Times*, May 12, 2021, https://www.nytimes.com/2021/05/09/us/covid-school-reopening-virtual-learning.html.

11. For insights into the practices that produce effective self-paced instruction, see Kareem Farah, "How to Create a Self-Paced Classroom," Cult of Pedagogy, November 8, 2020, https://www.cultofpedagogy.com/self-paced-how-to/.

12. We also compared teachers' responses to this item across three models of hybrid instruction (concurrent, split schedule, and split modality). Results for the three hybrid models mirrored the aggregated responses of all hybrid teachers.

13. See, for example, the story about Rory Levin in Natasha Singer, "Online Schools Are Here to Stay, Even After the Pandemic," *New York Times*, April 11, 2021, https://www.nytimes.com/2021/04/11/technology/remote-learning-online-school.html.

14. We also compared teachers' responses to this item across three models of hybrid instruction (concurrent, split schedule, and split modality). Results for the three hybrid models mirrored the aggregated responses of all hybrid teachers.

15. Live instruction over video is the one online learning practice that is projected to see a sharp decline from its current usage once the pandemic ends. This decline makes sense, considering that once most instruction returns to brick-and-mortar schools, the need for live instruction over video will greatly diminish. Interestingly, however, a quarter of teachers and nearly half of administrators plan to keep using live instruction over video. We suspect that the practice will be an enduring mode of instruction for students who stay home sick, or for days when in-person classes are canceled due to inclement weather. We also expect schools and teachers will regularly use video technology in the future for meeting more conveniently with parents.

16. Blended learning is a formal education program in which a student learns in part online, with some element of control over the time, place, path, or pace of their learning, and in part in a brick-and-mortar location away from home. The modalities along a student's learning path are connected to provide an integrated learning experience. The Institute has studied blended learning in its various forms for over a decade. To learn more, see "What is blended learning," Blended Learning Universe, https://www.blendedlearning.org/basics/.

17. Because blended learning involves instruction in a brick-and-mortar setting, we didn't ask teachers who taught primarily in remote learning arrangements during the 2020-21 school year about their use of blended-learning models. As such, the results presented in this section do not represent the entire sample of survey respondents, and shouldn't be interpreted to represent the adoption of blended learning across all teachers. At a minimum, if we made the conservative, if unlikely, assumption that all teachers who taught remotely during the 2021-21 year won't use blended learning after the pandemic, the overall proportion of teachers who plan to use blended learning post-pandemic would still be at least 25%.

18, Tracey Tully, "New Jersey's governor removes the remote learning option for the next school year," *New York Times*, May 17, 2021, https://www.nytimes.com/2021/05/17/world/nj-schools-covid-virtual.html.

19. In a January 2021 paper, we reported that 69% of US school systems had created virtual school options (see Arnett, "Breaking the mold"). That number, based on data from our fall 2020 survey, is much higher than the 41% reported here. We suspect that this discrepancy may have been due to wording in our fall 2020 survey that led some administrators to interpret remote learning programs in their school systems as fitting the virtual school option we asked about in that survey.

20. The Center on Reinventing Public Education maintains a database of learning hubs and pods provided by school systems and other community organizations. See https://www.crpe.org/current-research/learning-pods.

21. "EDITORIAL: Southern Nevada Urban Micro Academy posts impressive academic gains," *Las Vegas Review-Journal*, December 22, 2020, https://www.reviewjournal.com/opinion/editorials/editorial-southern-nevada-urban-micro-academy-posts-impressive-academic-gains-2229350/.

22. Holly Kurtz, "As Delta Variant Spreads, Twice as Many K-12 Leaders Pivot to Hybrid Learning," *Education Week*, August 9, 2021, https://www.edweek.org/leadership/as-delta-variant-spreads-twice-as-many-k-12-leaders-pivot-to-hybrid-learning/2021/08. Additionally, as noted earlier, our survey data showed that nearly two thirds of teachers who taught in hybrid and remote arrangements last year estimated that their students were behind in their learning growth compared to a typical year. Our data corresponds with other estimates that most students are behind in their learning last year: for example, see Jill Barshay, "PROOF POINTS: Three reports on student achievement during the pandemic," The Hechinger Report, August 9, 2021, https://hechingerreport.org/proof-points-three-reports-on-student-achievement-during-the-pandemic/.

23. Echelon Insights, "National Parents Union Survey," June 2021, https://mercuryllc.app.box.com/s/x9ukq0qgjvbam3i9ssbyi899pex0wmyi.

24. Ibid.

25. Rebecca Klein, "These parents want more virtual learning. New Jersey says they're on their own," The Hechinger Report, July 19, 2021, https://hechingerreport.org/these-parents-want-more-virtual-learning-new-jersey-says-theyre-on-their-own/.

26. Michael B. Horn, "By Fall, Every Child Should Have An Individualized Learning Plan," *Forbes*, July 14, 2021, https://www.forbes.com/sites/michaelhorn/2021/07/14/by-fall-every-child-should-have-an-individualized-learning-plan/.

27. A Christensen Institute study from 2018 found that when school systems took on initiatives to shift teachers' instructional practices, some teachers only changed their practices enough to show compliance with leadership mandates. These teachers' reactions did not produce the kind of creative problem solving required for effectively implementing the new practices. See Thomas Arnett, "The teacher's quest for progress: How school leaders can motivate instructional innovation," Christensen Institute, September 12, 2018, https://www.christenseninstitute.org/publications/teachers-jobs-to-be-done/.

28. For examples of how online learning can support stronger relationships between teachers and students, see Stacey Roshan, *Tech with Heart: Leveraging Technology to Empower Student Voice, Ease Anxiety, & Create Compassionate Classrooms* (San Diego: Dave Burgess Consulting, Incorporated, 2019).

29. Bob Wise and Javaid Siddiqi, "The funding and will to transform education are here — we must seize the moment," *The Hill*, May 30, 2021.

30. To learn about the Lindsay Unified School District's work to implement student-centered learning, see Lindsay Unified School District, *Beyond Reform: Systemic Shifts Toward Personalized Learning*, (Bloomington: Marzano Research, 2017.

31. See "Personalized Learning in Kettle Moraine," Kettle Moraine School District, https://www.kmsd.edu/personalizedlearning.

32. For insight into the circumstances that make change possible during the COVID-19 pandemic, see Chelsea Waite and Thomas Arnett, "Will schools change forever? Predicting how two pandemics could catalyze lasting innovation in public schools," Christensen Institute, October 20, 2020, https://www.christenseninstitute.org/publications/school-change/.

33. To understand the leadership approaches that school system leaders can use to rally their stakeholders around a new vision for student-centered practices, see the description of "leadership tools" in Clayton M. Christensen, Matt Marx, and Howard H. Stevenson, "The Tools of Cooperation and Change," *Harvard Business Review*, October 2006, https://hbr.org/2006/10/the-tools-of-cooperation-and-change.

34. In our research, we've found a few compelling examples of district virtual schools that have enhanced their programs by setting up physical facilities to support their students, similar to the concept of learning hubs. See, for example, Springs Studio (https://www.d49.org/Domain/24) and Village High School (https://village.asd20.org/) in Colorado Springs, Colorado.

About the Institute

The Clayton Christensen Institute for Disruptive Innovation is a nonprofit, nonpartisan think tank dedicated to improving the world through Disruptive Innovation. Founded on the theories of Harvard professor Clayton M. Christensen, the Institute offers a unique framework for understanding many of society's most pressing problems. Its mission is ambitious but clear: work to shape and elevate the conversation surrounding these issues through rigorous research and public outreach.

About Bay View Analytics

Bay View Analytics, formerly known as the Babson Survey Research Group, is a survey design, implementation, and analysis organization. Bay View Analytics partners with and conducts research for universities, businesses, foundations, and agencies including the London School of Business, Hunter College, the College Board, the Alfred P. Sloan Foundation, The William and Flora Hewlett Foundation, The Gates Foundation, and Tyton Partners. Bay View Analytics' activities cover all stages of projects, including initial proposals, sample selection, survey design, methodological decisions, analysis plan, statistical analyses, and production of reports.

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