

# Examples of Successful Online Instruction in Ten Schools: Fall 2020

## Key Findings

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- The teachers we observed were overwhelmingly positive in their approach to online instruction and embedded practices in their online classrooms that established and supported a sense of community and belonging despite the physical distance from their students.
- Most teachers in our sample effectively used technology to deliver instruction using multiple formats while monitoring student behavior and participation.
- Engagement appeared to be higher when teachers employed activities that required students to authentically interact with the academic content.
- During observations, teachers also used a diverse array of assessment strategies. Gamification of quizzes and checks for understanding were particularly engaging for students.
- Challenges to learning online included distractions in students' home environment, issues related to technology and internet connectivity, and difficulties in accurately assessing who needs individual support.

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## About this report

Following the unexpected school closures caused by the coronavirus pandemic (Covid-19), the School District of Philadelphia (SDP) released its [Continuity of Education Plan](#) to provide educational and instructional materials, resources, and supports to students, families, and staff. On March 16, 2020, school buildings closed, and in Spring 2020, SDP began implementing online instruction. In Fall 2020, with coronavirus rates still high and predicted to increase in the winter, SDP decided to continue online-only instruction until coronavirus infection rates decreased and it was safe to return to in-person instruction. **To better understand how teachers and students were interacting in the online instructional environment, we conducted more than 100 classroom observations in October and November 2020.**

## What we examined

Much of the existing research on remote learning in a K-12 setting is limited, and findings on the impact of online learning on student learning outcomes are mixed.<sup>1</sup> In addition, the focus of most of the research is about the effectiveness of online learning compared to traditional face-to-face learning, not about methods to inform best practices for teaching in online environments (Ferdig et al., 2009).

Because online learning will likely continue through 2020-21, the Office of Research and Evaluation (ORE) conducted 118 virtual classroom visits over the course of October and November of the 2020-2021 school year. **The primary goal of our observations was to fill a gap in the literature by gaining a better understanding of the practices used by teachers at schools that were identified as “successful” at implementing online instruction. The data and analysis presented in this brief is not meant to be representative of the implementation of online instruction within the District at large.** Since the sample for this brief is limited to teachers at schools who were identified by administrators as implementing online instruction more successfully, relative to other schools, it is our hope that we can identify practices to bring to scale within the District that may improve online instruction District-wide.

The following research questions guided the virtual classroom visits:

1. How are selected teachers implementing research-based practices of effective online instruction?
2. What challenges do selected teachers and their students experience during online instruction?

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<sup>1</sup> A recent report by the Education Endowment Fund (EEF, 2020) summarized findings from 60 systematic reviews and meta-analyses on remote learning and noted that 1) none of the studies examine impacts on learning during a global pandemic, and 2) most of the studies look at college or adult learners.

## The Research Framing Our Observations

To inform the transition to online instruction, the SDP Office of Research and Evaluation (ORE) conducted a review of existing meta-analyses and systematic reviews to find evidence-based practices for online learning. This review culminated in a research brief that detailed elements of effectiveness that should be applied to the online learning environment, as well as research-based recommendations and strategies that the District should consider to ensure teachers and students are properly supported during the transition to digital learning.<sup>2</sup> The observation protocol and analyses were structured around the key findings from the literature in the areas of classroom climate, content delivery, engagement in instructional tasks and collaborative learning, assessment, and providing academic support (as it pertains to the online environment).<sup>3</sup>

## About our Data Collection and Sample

### Researchers visited 56 classrooms at 10 schools for a total of 118 observations.

In order to create a sample of classrooms to visit virtually, ORE worked with the Assistant Superintendents (AS) to identify one school that the AS felt was particularly successful at implementing online instruction to “represent” each network.<sup>4</sup> After these schools were identified, researchers from ORE contacted principals and asked them to identify teachers who, in their opinion, were effectively implementing online instruction and might be interested in participating in our study. In total, 56 teachers at 10 schools agreed to participate in the observations (Table 1). Researchers visited each teacher/classroom at three or four mutually agreeable times during October and November of 2020, for a total of 118 observations.

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<sup>2</sup> Read the brief in full: <https://www.philasd.org/research/wp-content/uploads/sites/90/2020/05/Online-Learning-Summary-of-Literature-Focus-Brief-May-2020.pdf>

<sup>3</sup> The practices described in this brief are not an exhaustive list of research-based practices, nor are they an exhaustive list of the practices implemented in the classrooms that we observed. Additionally, practices described in this brief are not necessarily practices that teachers are required to use in part or in full.

<sup>4</sup> There were no specific criteria for selection. We asked Assistant Superintendents to identify schools that were, in their opinion, “implementing online learning well” and representative of their network (not necessarily the highest performing school), if possible.

Table 1. Number of observations by school

| School Type                     | School                                | Grades Served | Grades Observed  | Number of Teachers Observed | Total Number of Observations |
|---------------------------------|---------------------------------------|---------------|------------------|-----------------------------|------------------------------|
| Elementary                      | Barton                                | K-2           | K, 1, 2          | 7                           | 17                           |
|                                 | Forrest                               | K-6           | 5, 6, 7, 8       | 8                           | 16                           |
| Elementary/<br>Middle<br>School | Overbrook<br>Education Center         | K-8           | 1-8              | 4                           | 11                           |
|                                 | Jackson                               | K-8           | 1, 2, 4, 5, 6, 7 | 7                           | 18                           |
|                                 | McCloskey                             | K-8           | K, 3, 4, 5, 6    | 5                           | 12                           |
|                                 | Mitchell                              | K-8           | K, 2, 7          | 3                           | 3                            |
| Middle School                   | Conwell                               | 5-8           | 5, 6, 7, 8       | 7                           | 16                           |
|                                 | Clemente                              | 6-8           | 6, 8             | 4                           | 7                            |
| High School                     | Parkway Center City<br>Middle College | 9-12          | 9, 10, 11        | 8                           | 12                           |
|                                 | SLA                                   | 9-12          | 9, 10, 11, 12    | 3                           | 6                            |

Note: Schools that were selected agreed to be named in this report.

### About half of the observations occurred in K-5 classrooms and the other half in 6-12 classrooms.

About one-third of the observations occurred in kindergarten through third-grade classrooms (35%) (Table 2). Another third of the observations occurred in middle school classrooms (grades 6-8). A smaller percentage of observations occurred in fourth and fifth grade (19%) and high school (grades 9-12) (15%).

Table 2. Number of observations by grade band

| Grade Band | Number of Observations | Percentage of Observations |
|------------|------------------------|----------------------------|
| K-3        | 41                     | 35%                        |
| 4-5        | 22                     | 19%                        |
| 6-8        | 37                     | 31%                        |
| 9-12       | 18                     | 15%                        |
| All Grades | 118                    | 100%                       |



## Two-thirds of observations occurred during lessons in math or English Language Arts (ELA).

We observed lessons across all content areas, with a focus on ELA and math instruction. Over one-third (35%) of the 118 observations occurred during a math lesson, and an additional 30% occurred during an ELA lesson (Table 3). About one fifth (19%) occurred during a science/engineering or social studies lesson. Most of the remaining observations occurred during a special/elective such as physical education/health, art, computer/technology, and music.

Table 3. Number of observations by subject and grade band

| Subject Area Observed | Number of Observations by Grade Band |     |     |      | Total Number of Observations | Percentage of Total Observations |
|-----------------------|--------------------------------------|-----|-----|------|------------------------------|----------------------------------|
|                       | K-3                                  | 4-5 | 6-8 | 9-12 |                              |                                  |
| Math                  | 13                                   | 5   | 17  | 6    | 41                           | 35%                              |
| ELA                   | 20                                   | 3   | 10  | 2    | 35                           | 30%                              |
| Science/Engineering   | 0                                    | 6   | 2   | 6    | 14                           | 12%                              |
| Social Studies        | 0                                    | 2   | 2   | 4    | 8                            | 7%                               |
| Physical Ed./Health   | 3                                    | 2   | 1   | 0    | 6                            | 5%                               |
| Art                   | 0                                    | 2   | 2   | 0    | 4                            | 3%                               |
| Computers/Technology  | 1                                    | 0   | 3   | 0    | 4                            | 3%                               |
| Music                 | 2                                    | 2   | 0   | 0    | 4                            | 3%                               |
| Community Meeting     | 2                                    | 0   | 0   | 0    | 2                            | 2%                               |

## Most of the classrooms we observed had 21-30 students in attendance.

About two-thirds of the classrooms that researchers observed had 21-30 students present (Table 4). Most of the remaining classrooms had 11-20 students in attendance. Only eight observed classrooms had fewer than ten students or more than 31 students present.

Table 4. Number of students observed in each classroom

| Number of Students Observed in the Classroom | Number of Observations | Percentage of Observations |
|--|------------------------|----------------------------|
| 1-5  | 1                      | 1%                         |
| 6-10   | 5                      | 4%                         |
| 11-20  | 37                     | 31%                        |
| 21-30  | 73                     | 62%                        |
| 31-40  | 2                      | 2%                         |

## Students were most often observed at home or the home of a family member.

Nearly all observations included students working from home. Students were also observed attending class from Access Centers or group care facilities, like daycares. Finally, a few students were attending class from a car or were in learning pods at home with other students (Table 5).

Table 5. Location of observed students

| Location of Students During Digital Learning  | Number of Observations | Percentage of Observations |
|---|------------------------|----------------------------|
| At home/home of family member   | 116                    | 98%                        |
| Access Center (either individually or with group of classmates)                         | 26                     | 22%                        |
| Group Care Facilities (i.e. Daycares) (either individually or with group of classmates) | 25                     | 21%                        |
| Learning Pods/Groups (with other students at a home)                                    | 2                      | 2%                         |
| Car   | 2                      | 2%                         |

Note: Observers could choose more than one option for students' locations, so responses will not sum to the total number of observations. Excludes "Could not observe" responses (for example, if students' cameras were off).

## What we found

The findings are divided into five topic areas, each reflecting a key component of teaching in the online environment. These topic areas are:

1. Establishing and Maintaining a Positive Classroom Climate,
2. Delivering Content in an Online Environment,
3. Engaging Students in Learning in an Online Environment,
4. Supporting Students in an Online Environment, and
5. Assessing Student Learning in an Online Environment.

Within each topic area, there is a/an:

- brief review of **the literature** as it pertains to that topic area,
- **quantitative analysis** that summarizes the strategies used by selected teachers,
- **analysis of the key takeaways** from our observations, and
- acknowledgement of some the **challenges** that teachers and students encountered.

## Establishing and Maintaining a Positive Classroom Climate

### What does the literature say about the importance of classroom climate in an online environment?

**A positive school and classroom community and culture has been well-documented as an indicator of student success in both traditional and remote learning environments.**

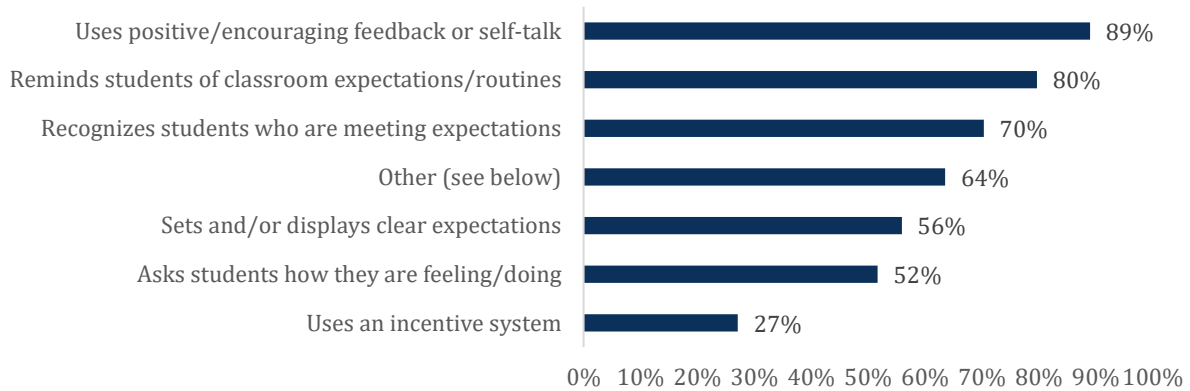
Lee and Burkham (2001) found that the most important factor in student satisfaction and persistence “may have more to do with the social organization of the school than with any other factor” (cited in Rice, 2006, 438-9). Relationships between teachers and students have been shown to be particularly integral in the early grades, when a sense of security and belonging may be more critical to success in a virtual environment. Additionally, research suggests that having clear expectations and learning criteria within the classroom and school community may enhance motivation to complete assignments in a remote environment. This includes, but is not limited to, expectations around the completion of assignments, online behavior, and student-to-teacher and peer interactions (Darnell, 2013; International Association for K-12 Online Learning, 2011).

### What strategies did teachers use to establish and maintain a positive classroom climate in an online environment?

**Teachers that we observed established a positive learning environment by using positive and encouraging language, having clear expectations for students to follow, and providing opportunities for students to share with each other.**

Across observations (89%) observers noted that the teachers selected for observations used positive/encouraging feedback or self-talk to keep students engaged and motivated (Figure 1). Additionally, during most observations, the teacher either set or displayed clear expectations, reminded students of expectations, or recognized students who were meeting expectations. In about a quarter of the observations, teachers used an incentive system to reward students who met expectations. Many teachers also acknowledged students’ social/emotional needs by asking how they were feeling and providing additional opportunities for students to share and build relationships.

Figure 1. Practices used to establish and maintain a positive climate during observations (n=118 observations)



**Teachers also established a positive climate by embedding non-academic games, music, and “brain breaks” into instruction.**

In about two-thirds of observations, teachers selected for observations used a strategy not listed on the protocol to establish a positive online environment for their students (“other,” 64%; Figure 1). For example, some teachers used popular music to engage students at the start of the lesson, during independent practice, or during transitions. Teachers also treated classrooms that earned breaks to non-academic games, such as Kahoots and “Guess My Number.” In some classrooms, teachers provided “brain breaks” or “movement breaks” at the start of the lesson to “get the wiggles out” or when students started to lose focus. For younger students, these breaks included “ABC jumping jacks” or doing the “hokey pokey.” For older students, movement breaks included stretches and “dance parties.”

## What are the key takeaways about establishing and maintaining a positive classroom climate in an online environment?

### Key takeaways in this section include:

1. Teachers embedded opportunities for students to build positive relationships with each other in the online environment by sharing personal stories, feelings, and concerns.
2. Teachers offered incentives that encouraged student participation and engagement in the online environment.
3. Teachers provided students with clear expectations for behavior and participation and gave positive feedback when expectations were met.
4. Teachers were overwhelmingly positive and consistently encouraged student participation during online lessons.

### **Teachers embedded opportunities for students to build positive relationships in the online environment by sharing personal stories, feelings, and concerns.**

Observers noted that most teachers selected for observations made an effort to establish a sense of community, even though classrooms were online. One observer wrote, “The class had a sense of a cohesive community,” and another commented, “The class has a clear, consistent routine, and a well-established community. These elements make the conduct of the class go smoothly and minimize the disruptions when there are issues.”

Teachers also offered students opportunities to share personal stories, feelings, and concerns. In most cases, sharing took place prior to the start of a lesson or during breaks from academic assignments. Some opportunities seemed specifically geared towards developing relationships among peers. For example, teachers asked students to share what they ate for lunch, what kind of pet they have, or what they did for Halloween. Other teachers asked students more complex questions such as, “What is something that you wished lasted longer than it does?” and “What is something that you want to learn how to do?”

Teachers also made an effort to understand students’ social-emotional needs. For example, a few teachers used “emoji checks” in which students added an emoji to a jamboard that described how they were doing/feeling. Other teachers asked students to put a number in the chat box (1-10) that corresponded to how they were feeling that day. Some teachers simply asked students to share how they were doing while on camera. Teachers also made efforts to encourage participation and positively acknowledged student responses.

## **Incentives encouraged online participation and engagement.**

Many teachers who were observed using incentive systems used PBIS points, which are tracked using Class Dojo. In a few cases, teachers assigned the job of tracking PBIS points to a classroom assistant or non-instructional staff member. Points were primarily rewarded to students for being on task, participating in a lesson, or completing an assignment. One observer wrote, “The teacher utilizes class Dojo for positive reinforcement and it really does create a nurturing learning environment for the students.”

In other cases, teachers selected for observations used alternative incentive systems; for example, spelling the word “attendance” by earning a letter each time all students were present and on camera, which would result in a classroom dance party. Students were excited about this incentive and texted their friends to come to class so that the letter could be earned. Other classrooms used “classroom cash” incentives that students could use to buy prizes. There were also instances where teams of students could compete for points through the completion of tasks. Finally, a simple way that some teachers encouraged focus and engagement was by “spotlighting” students who were modeling classroom expectations by pinning their video to make it the largest on the screen.

## **Teachers provided students with clear expectations for behavior and participation and gave positive feedback when expectations were met.**

Teachers most frequently reminded students of classroom expectations for the use of audio and video. Generally, students were asked to keep their video on during synchronous instruction and to stay on mute unless responding to a question. One observer commented:

I was surprised by how orderly the class was in a virtual setting given that this is a class full of 17 kindergartners. They all knew when to turn on the sound and mute their sounds. They were all focused on the teacher's instructions and kept trying to answer the teacher's questions on one-on-one call outs.

Most teachers also set expectations for student communication, specifically when and how to use the chat box and ask questions.

Generally, teachers displayed expectations and norms in four ways: 1) an intro slide at the beginning of each lesson, 2) a poster in view behind the teacher, 3) holding up cards to the screen with different expectations written on them, and 4) displaying visual pictures for younger students (such as a lion sitting at his computer ready to listen).

Teachers typically addressed improper behavior quickly and appropriately. For example, when a student was not using the chat properly, the teacher stopped the class to address issues. When students were struggling to focus on a lesson, the teacher instituted a “brain break.” At times, teachers also responded to student issues in a private chat. One observer explained:

Throughout the whole reading time, the teacher was attentive and aware of when some of her students started to lose engagement/attention. Every time the teacher spotted lack of engagement from certain students, she would be proactive about it and interact with those students in a way that got them interested in the learning content again. I think the teacher's level of awareness of her virtual classroom, positive energy, and willingness to engage one-on-one with students who struggled from time to time were all the factors that made this virtual classroom great.

Teachers highlighted examples of students meeting expectations throughout their lessons. For example, observers noted that some teachers would use the “spotlight” feature in Zoom to bring attention to students who were on task. Teachers provided consistent verbal praise for students who were focused and on-task by offering feedback such as “Great job following directions!” or “I appreciate you being ready to learn!”

### **Teachers were overwhelming positive and consistently encouraged student participation.**

Observers overwhelmingly described teachers selected for observations as “positive,” “warm,” and “friendly.” One observer wrote, “I was just so impressed with how positive the teacher was. She had a lot of energy in her voice to engage the students. She was constantly trying to use positive reinforcement.” Another observer wrote:

The teacher having an amazing and positive attitude to uplift the class and get everyone engaged is really important. Even during a 10-minute break time, the teacher wouldn't just log off, she would be right there engaging with the students.

Teachers also provided examples of positive self-talk. For example, when posing math problems for students to solve, one teacher added, “Two of these are tricky. You’re going to say to yourself, you can’t trick me, I’m too smart!”

### **What were the challenges to establishing and maintaining a positive classroom climate in an online environment during the fall observations?**

#### **Overall, observers witnessed few challenges related to classroom climate.**

In many instances, observers described the classrooms -selected for observations as positive and focused learning environments. Several observers described the classrooms selected for observations as having “a positive classroom climate despite the distance and virtual nature,” others observed that the teacher and students had built “strong relationships” and others commented about how routines were “established,” “solid,” and “clear.”

### **Inappropriate use of the chat feature was the primary behavioral issue.**

Observers noticed that students did not always use the chat feature appropriately and it became a hinderance to instruction. For example, in one classroom, students were sending messages during class and although other students attempted to intervene, it became a substantial distraction. In another observation, the observer noted that students were “hijacking the chat for their own conversation.” In a third observation, the observer commented that a student accidentally sent what was meant to be a private chat message to one classmate to the entire class.

### **There were also instances where students challenged behavioral expectations.**

In some classrooms selected for observations, observers noted that students were not behaving in a way that maximized their ability to focus on school work. Specifically, some observers noted students laying down in their bed or eating snacks. Others observers noticed students playing with a toy or generally focused on something off screen. In all cases, teachers noticed these misbehaviors and attempted to address them.

## **Delivering Content in an Online Environment**

### **What does the literature say about delivering content in an online environment?**

**In the virtual classroom, instructional success hinges on the ability of the teacher to use technology.**

The research is clear: students learn best online when teachers are proficient in their use of technology and receive explicit training aimed at improving (McFarlane, 2011; iNACOL, 2011; Oliver et al., 2010; Darnell, 2013). Teachers must be able to use both asynchronous and synchronous learner-centered strategies and tools to maximize interaction between the teachers and students and have the capability to integrate diverse media and forms of presentation into assignments.

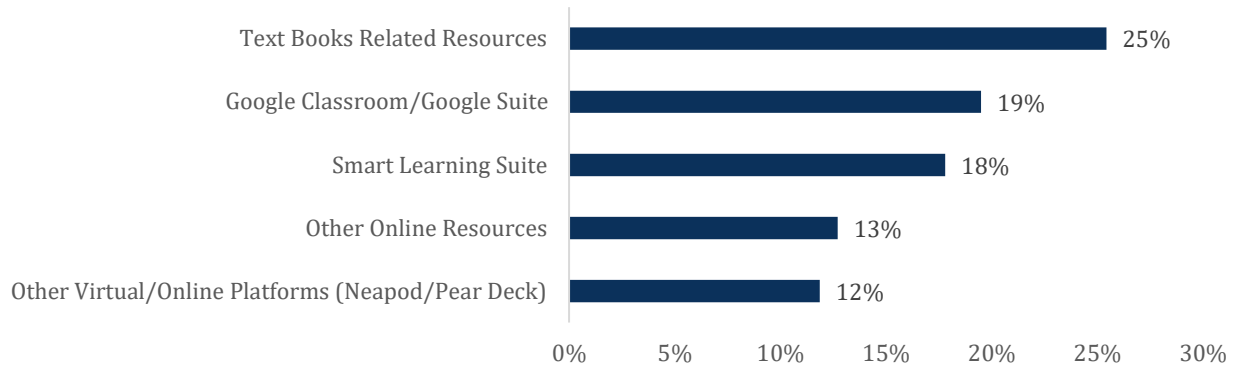
### **What strategies did teachers use to deliver content in an online environment?**

**Teachers utilized a variety of platforms and online resources to deliver content.**

In each of the observed classrooms, teachers used a variety of online platforms and resources to support student learning. About a quarter of the teachers used online resources associated with their textbooks (Figure 2). In about a fifth of the observations, teachers used Google Classroom or Smart Learning Suite. During some observations, teachers used platforms such as Nearpod and Pear Deck.



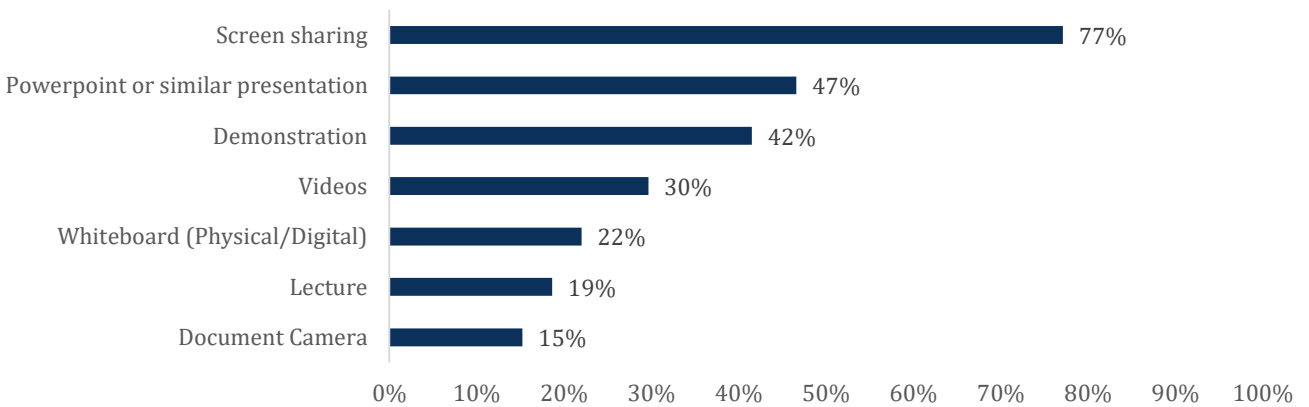
Figure 2. Platforms and resources used to deliver content during observations (n=118 observations)



**Teachers used multiple modes of presentation during instruction.**

Throughout our observations, teachers used many strategies to present content. The most frequently used strategy was screen sharing, which was observed in 77% of classrooms (Figure 3). About half of the teachers used a PowerPoint (or slide deck) presentation, and 42% conducted some type of demonstration. Teachers also used videos and physical or digital whiteboards. In 19% of observations, teachers chose a lecture as their presentation format.

Figure 3. Strategies used to deliver content during observations (n=118 observations)



## What are the key takeaways about delivering content in an online environment?

### Key takeaways in this section include:

1. Using multiple computer screens and other technology allowed teachers to effectively monitor students and present content at the same time.
2. Using a mixture of delivery modes kept students engaged in the lessons, but this required teachers and students to have a good grasp of technology.
3. Nearpod and Pear Deck helped teachers streamline multiple modes of presentation.

### **Using multiple computer screens and other technology allowed teachers to effectively monitor students and present content at the same time.**

Many teachers had two screens set up: on one, they displayed the grid of students in Zoom or Google Meet, and on the other, they delivered content to students. This allowed teachers to monitor students while also presenting content. One observer described, “The teacher used two cameras, one on their computer and the other with a wide view of their living room, in order to switch between speaking with students and then demonstrating the exercises in a larger space.” Teachers who did not have two screens sometimes struggled to monitor student reactions and responses in the chat box while also presenting content and responding to student work.

Additionally, some teachers used document cameras to conduct effective demonstrations. For example, teachers used their document cameras to demonstrate how they worked through a math problem, how to start a journal entry, or to how to conduct a science experiment. Document cameras seemed especially essential for art teachers who needed to model styles of drawing. One observer noted that it would be quite impossible for art teachers to conduct effective lessons without the document camera.

### **Using a mixture of delivery modes engaged students in the lessons but also required teachers and students to have a good grasp of technology.**

Most teachers selected for observations used multiple modes of presentation, such as a slide deck to present information and a digital whiteboard or collaborative worksheets for students to practice their emerging skills. Teachers often used a chat box or poll to check for student understanding in addition to verbal question-and-answer. One observer wrote, “The students stayed engaged because the teacher integrated several modes of instruction, practice, and assessment. Everything was interactive and student performance was constantly monitored.”

Another observer described a teacher using a mix of delivery modes:

The teacher used technology seamlessly. They planned an interactive lesson where students examined rocks... They used the document camera to make examining a rock together as a class possible. The teacher had planned ahead ways for students to show their rocks (instructing the class to pin that student). The teacher had an anchor chart with the physical properties of rocks ready to refer back to on a slide. Prompting students to have the right windows or tabs up (Smart or Google Meet) and to have their cameras on did not feel any more disruptive than the prompts that need to happen in-person (e.g., pencil out, graphic organizer on desk, eyes forward, etc.).

Integrating several modes of delivery did not appear to be an easy feat for teachers. One observer commented, “I would also say that the teacher's approach of having several things up on the screen, assigning PBIS points, and using a document camera required a high level of technical skills.”

Using multiple modes of presentation also required students to navigate between modes of presentation. Teachers who used multiple modes appeared to have a good grasp of technology and frequently reminded students how to navigate amongst the various modes of presentation.

### **Nearpod and Pear Deck helped teachers streamline multiple modes of presentation.**

Some of the teachers we observed used Nearpod or Pear Deck to present content in a way that combined and streamlined various modes of delivery. For example, Nearpod includes a “bitmoji classroom” where students clicked on various graphics within the classroom to complete assignments. Additionally, teachers could curate various modes of delivery, activities, and formative assessment into one slide deck and could see students completing the activity/task on each slide. Nearpod also allowed teachers to “gamify” assignments and formative assessment by integrating activity templates. One observer explained, “Nearpod helped to organize everything and keep assignments interactive.” Another said, “Nearpod seemed to fit very smoothly with the goal of being able to monitor student work.” Some teachers used Pear Deck, which is a Google Slides add-on that allows teachers to do similar functions as Nearpod (without access to a content library).

### **What were the challenges to delivering content in an online environment during the fall observations?**

**In many observations, students encountered internet issues that impeded their ability to learn online.**

Although in almost all cases *teachers* selected for observations appeared to have adequate internet, there were about three dozen instances where observers noted that students had internet or connectivity issues that affected their ability to learn online. In most cases, these issues caused students to freeze on screen or break up when they tried to talk. In other cases, the issues resulted in tardiness, working from a phone, logging off and in again, or restarting their computer.

**Although the vast majority of teachers seemed adept at using technology to deliver content, some did encounter a few technical challenges.**

Overall, teachers that we observed delivered content with few challenges and were adept at navigating the many platforms needed to deliver content in an engaging way. However, in about twenty classrooms, technical challenges impeded the smooth delivery of content. In some cases, the teacher struggled to manage the number of screens and tabs he/she needed to deliver the content as planned. One observer described that the teacher said she was having an issue with “so many screens.” The observer expanded, “She was having trouble leaving up the screen/tab she was presenting, bringing up another tab to assign PBIS points, and still being able to see students...”

In other cases, observers noted that teachers had difficulty navigating various platforms. For example, one teacher had trouble with the Smart Learning Suites (SLS) and a few others were not able to properly use the features of the Google Meet. For example, in one case, all of the students had to log off and log back in using a new Google Meet link. However, these instances rarely derailed the delivery of content.

## **Engaging Students in Learning in an Online Environment**

### **What does the literature say about engaging students in learning online?**

**Research suggests that effective strategies to help students to learn content online include the use of modes that require students to interact and collaborate with each other and the teacher to complete assignments.**

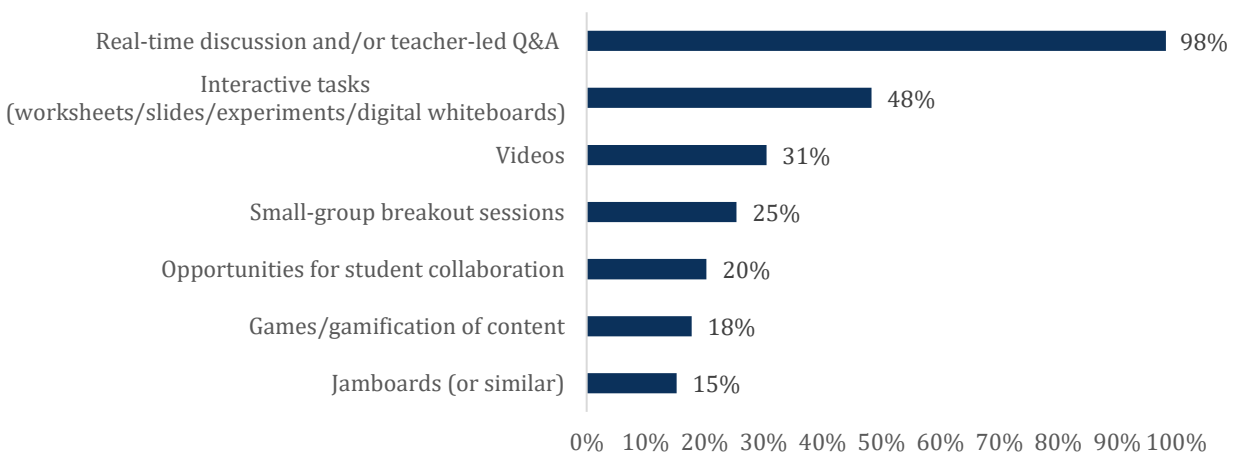
Across studies of K-12 online education, strategies to support virtual learning include the integration of interactive teaching and communication methods. Examples of these methods include chat boxes, video chats, virtual polls, online games, and whiteboard features and learner-centered activities that require virtual student collaboration. Online instructional strategies should also promote student interaction in online groups in order to foster collaboration and promote higher-order thinking skills such as analysis, synthesis, and/or evaluation (McFarlane, 2011; iNACOL, 2011; Oliver et al., 2010; Darnell, 2013). Additional research notes that increased interaction during online learning through the provision of opportunities to model and share work, provide feedback, and discuss content with peers can influence motivation and engagement and result in increased student persistence (Frid, 2001 cited in Rice, 2006).

## What strategies did teachers use to engage students in the online environment?

### Discussion prompts and assignments required students to collaborate and interact with their peers.

In nearly all of the observations we conducted, teachers used discussion strategies to engage students in learning content (Figure 4). In about half of the observed classes, teachers used interactive tasks such as online worksheets, slides, experiments, and digital whiteboards. During a quarter of observations, teachers used small-group break-out rooms.

Figure 4. Strategies used to engage students during observations (n=118 observations)



## What are the key takeaways about engaging students in an online environment?

### Key takeaways in this section include:

1. Teachers used interactive activities to engage students with materials in their home environment.
2. Teachers used manipulatives and hand gestures to increase engagement and reduce the need for student audio.
3. Teachers effectively engaged students by assigning classroom roles and responsibilities.
4. When expectations were clear, small-group work enhanced opportunities for academic collaboration.
5. Students seemed most engaged when teachers had an effective strategy to keep them focused and accountable.
6. Teachers relied on various interactive websites to enhance their ability to engage students in content virtually.

**Teachers utilized interactive activities to engage students with materials in their home environment.**

Researchers often observed teachers engaging students by integrating hands-on at-home activities with opportunities for virtual engagement. In one science classroom, students used a rock they collected to complete a virtual, interactive graphic organizer. Students showed their rock on the screen, described it, and then named specific scientific properties by screen-sharing their virtual organizer. In a different science class, students used Skittles and a water dropper at home to complete an experiment and then used an interactive, virtual graphic organizer to list their observations of the Skittle.

In another classrooms that we observed, students learned about parts of speech by completing an at-home scavenger hunt. First, the teacher sent students into their homes to bring back items that could be described using different adjectives such as “soft” and “purple.” Then, students wrote sentences about their items and shared the sentences with their peers virtually. Students took turns reading their sentences and everyone raised their hands when a student read a noun.

**Manipulatives and hand gestures increased engagement and reduced the need for student audio.**

In some cases, it was clear that teachers selected for observations had provided their students with classroom supplies such as whiteboards, number cubes, and letter cards to use during lessons. These tools clearly engaged students and provided them with hands-on practice similar to what they would get in the traditional classroom.

For example, some students used individual whiteboards to complete math problems, write sentences, and practice letters. Using a whiteboard at home required little technological assistance from the teacher while allowing students to practice new skills. In most cases, after completing an assignment on the physical whiteboard, students would hold up their whiteboards to the camera for their teacher to assess their work.

In some cases, students also had manipulatives at their disposal. For example, students worked with math manipulatives such as “number cubes” during a math lesson. In another classroom, students used “letter cards” to display the letter that represented the sound that the teacher was making. Similarly, some teachers used hand gestures to engage students. During a different phonics lesson, students used various hand gestures to represent different vowel sounds. The teacher recognized when students were not making the correct gesture. These strategies allowed the youngest students to reply to phonics prompts while remaining muted.

**The assignment of classroom roles and responsibilities helped keep students engaged.**

In several classrooms that we observed, teachers assigned roles and responsibilities to students as a way of increasing engagement. For example, some students were assigned to the role of “leader/facilitator” of their small group. Other students within the small group may have been assigned roles such as “note keeper” or “presenter.” Another teacher assigned “letter leaders” for each day. The letter leader was charged with leading his/her peers in phonics practices. This role was awarded to students who were focused and participating in the phonics activities during the prior day’s lesson.

Another teacher appeared to assign every student a role in order to keep them engaged in the online classroom. Examples of these roles included being part of the “data analysis team” that summarized responses to polls and answers in the chat box; being part of the “chat bot team” to monitor the chat box and assist peers by adding links and flagging important questions for the teacher; and being part of the team that selected students to answer questions using the “wheel of names.”

### **When expectations were clear, small-group work enhanced opportunities for academic engagement.**

Across content types, teachers selected for observations used small groups as a way for students to engage in academic content through discussion, collaborative problem solving, and task completion. Small groups seemed to function best when students were assigned a very specific, defined task and had opportunities to share their work with others. In one classroom, students read a story as a whole group and then went into small groups to complete a slide about the theme. Then, they presented their slide to their peers and submitted them for a grade. In another classroom, groups worked together on their virtual whiteboards to complete a set of practice problems, one of which was randomly selected for the small group to present to the class.

Additionally, having a student in charge of facilitating the group ensured that students stayed on task. Small groups also greatly benefitted from the teacher quickly circulating through all of the break-out rooms to assess progress and answer questions. Having two screens added to teachers’ ability to monitor students. One observer commented, “The teacher was managing two break-out rooms (on different screens) during independent work, which was impressive.”

### **Students seemed most engaged when teachers had an effective strategy to keep them focused and accountable.**

During whole-class virtual instruction, students were more engaged when they knew that they would be required to submit work or called on to answer questions, explain their work, or respond to peers. One observer noted, “The expectation that students work through problems and submit responses was an important anchor for them to follow along with instruction and stay engaged.”

Teachers used various strategies to call on students. The use of the chat feature was particularly useful for facilitating discussion. One observer wrote, “The chat was an important tool of communication - both as a learning check, and a way to keep kids engaged.” In one classroom, after

a teacher asked students to respond in the chat, he would randomly select a student to summarize the responses in the chat and explain whether he/she agreed with his/her peers.

Teachers also facilitated engagement and encouraged focus in other ways. In one classroom, after each student showed their completed math problems on the virtual whiteboard, another student would be tasked with explaining why his/her peers chose a specific strategy. This approach encouraged students who were not actively presenting to focus on their peers. Teachers used programs such as the Class Dojo Randomizer feature and by spinning the “Wheel of Names” to randomly select students to answer questions.

### **Various interactive websites to enhanced teachers’ ability to engage students.**

Teachers selected for observations used a plethora of platforms and websites to enhance interactivity. For example, music teachers used QuaverMusic to allow students to explore and manipulate musical compositions and “play” different notes on instruments. In some math classrooms, teachers used games in the Desmos platform to engage students in learning geometry. In one classroom, students used Desmos to play a game called “polygraph” and then manipulated different shapes virtually on the platform. Technology teachers used the interactive websites Photopea and Shape Gram to teach students concepts of graphic design and photoshop. For example, students worked in Photopea and Shape Gram to manipulate photos and graphics and then shared their final results with their peers.

### **What were the challenges to engaging students in an online environment during the fall observations?**

#### **The distractions present in students’ immediate environment were the most common challenge to engaging students in learning online.**

In many observations, observers noted that that distractions in the learning environment - whether that be at home, at an Access Center, or a day care - was a barrier to students’ ability to fully engage in online learning. These distractions were described as loud televisions, siblings, and generally loud noises, especially in access centers and day cares. For example, one observer commented, “Sometimes there would be some sort of disruption (i.e. loud noises, adults talking, etc.) around students in their home/environment where they were taking the class from, and that would take the students’ attention away from the lesson.” However, in nearly all cases, observers also noted that these distractions did not usually result in the distraction of the entire class unless the students who were in loud environments went off mute. One observer commented, “Students really want to share and speak up, but their houses were really loud, so it was a problem to take them off mute to share or ask a question.”

#### **Some students had issues with their audio which posed barriers to fully engaging with their teachers and peers online.**



In addition to distractions in the learning environment, some students in the classrooms that we observed struggled with audio issues. For the most part, the audio issues appeared to be related to slow internet speeds or malfunctioning technology (i.e., computer speakers or headphones not working). For example, one observer commented, "One student's microphone was very distorted. One or two other students who spoke had so much lag that it was hard to understand them." Another observer described a prolonged issue with a student's audio that resulted in a missed opportunity to for the students to engage with the content:

One student wanted to participate in the class, but their sound was not working. The teacher stated: "I see that you are talking and that it is green, but I think something is wrong with your headphones or your jack. Try pulling your headphones out of the jack to see if we can hear you." When the sound still did not work the teacher offered: "Do you want to type it in the chat so you can participate?" The student did not type their response in the chat.

**In some cases, students did not have access to the physical and/or online materials needed to engage with the content and complete the required assignments.**

In some observations, students in the classrooms that we observed either did not have the materials they needed at home, had misplaced the materials, or had trouble accessing the platform/assignment. There were several instances where observers noted that students did not have a whiteboard and/or paper at home to complete a practice activity. In two other cases, some students didn't have the materials needed to complete a science experiment at home. In other observations, students did not have a code that was needed to access a platform, could not find the correct link, or struggled to sign in to a website.

**There were some students who did not have the computer skills necessary to navigate platforms and engage with content online.**

In some cases, students' emerging computer skills contributed to their inability to engage with content. For example, one observer commented, "Students were struggling with creating and moving texts boxes in their interactive worksheet." Another observer wrote, "When the student shared their screen, they had trouble toggling between sharing screen and muting/unmuting themselves." A third observer noted, "Some students (maybe 25%) had issues with transitioning to School Net to complete an activity." Additionally, if there was an issue with the activity, students were not always tech savvy enough to address it and although it was not their responsibility to do so, these kinds of issues had the protentional to derail the lesson. For example, one observer described:

There were some hiccups with the slides on Pear Deck and which problems were set up for students. Something was out of order and a table for a student work didn't have enough rows. Problems like that are very common, but in this virtual setting, I think it becomes harder to switch things around or just tell students "OK, draw an extra row on your worksheet."

## Supporting Students in an Online Environment

### What does the literature say about differentiating instruction in an online environment?

**Like the traditional classroom, instruction is most effective when it is differentiated to meet the needs of each learner.**

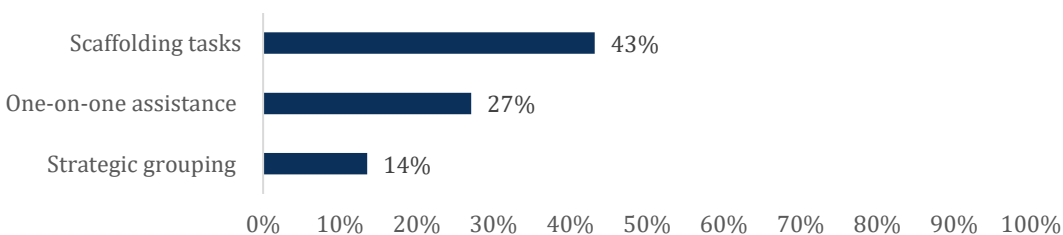
This includes differentiating in terms of prior knowledge and skills as well as preferred learning styles. Across studies of K-12 online education, strategies to support individual student learning in an online environment include individualizing instruction and pacing, identifying resources to support student needs, adapting materials, and utilizing small group and break-out rooms to address students with differing needs (Darnell, 2013; NSQOL, 2019).

### What strategies did teachers use to support students in an online environment during the fall observations?

**Teachers differentiated instruction to support struggling students.**

In 43% of the observations, teachers selected for observations used scaffolding to support student learning. In about a quarter of classes, teachers provided one-on-one support to students. In fewer observations (14%) observers notes the used of strategic grouping, however, this is a bit more difficult to observe given the fact that groups are often selected prior to the lesson.

Figure 5. Strategies used to differentiate instruction and support students (n=118 observations)



## What are the key takeaways about supporting students in an online environment?

### Key takeaways in this section include:

1. Teachers provided students with multiple opportunities for one-on-one assistance and individualized support.
2. Teachers differentiated instruction by integrating choice into their lessons.

### Multiple opportunities for one-on-one assistance and individualized support were key to supporting students.

Teachers selected for observations used different strategies to engage with students individually, including using the private chat and “raised hand” features, online polls, and asking students to use hand gestures (such as “thumbs up” or “thumbs down”) to indicate a need for additional support.

Although teachers were able to provide students with some one-on-one assistance during a lesson, the bulk of differentiated support took place outside of whole-group instruction. For example, teachers asked groups of students to remain in the virtual classroom at the end of a synchronous lesson to provide additional instruction and support. Teachers also provided one-on-one and small group support in break-out rooms while their classmates were working independently.

### Integrating choice into lessons helped differentiate instruction.

In some cases, teachers differentiated instruction by allowing students to select their own practice task. For example, one teacher provided two options for the same worksheet, one more challenging than the other. Another teacher allowed students to demonstrate their learning by completing an assignment independently or a similar assignment in a small group. Physical Education teachers provided alternate ways to complete a physical movement based on the available space in students’ homes. Lastly, in many instances, teachers provided differentiation by providing certain students with extra time to complete a task.

## What were the challenges to supporting students in an online environment during the fall observations?

### At times, it was difficult for teachers to identify students who needed additional support.

Teachers selected for observations could not always see students on their screen when they were presenting material and could not rely on facial expressions and body language as they might in the traditional classroom. As one observer wrote, in an online learning environment, it is especially important that teachers do not simply “rely on students saying that they did not understand a

lesson.” Another observer noted, “Students seem hesitant to speak up when they think they are the only ones having an issue, but especially when this is a technology related issue.”

## Assessing Student Learning in an Online Environment

### What does the literature say about assessing student learning in an online environment?

**In an online learning format, assessments should take a more dynamic approach than in the traditional classroom.**

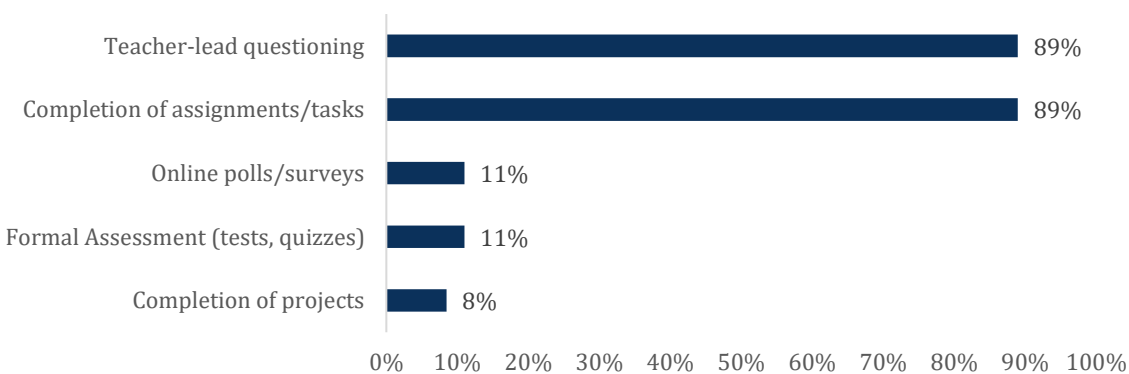
Like a traditional classroom, teachers should regularly assess student learning. However, online assessment may require a non-traditional approach. Adequate assessments allow for task-specific feedback which helps students understand where they are and how they can improve (Evidence Based Education, 2020). Research suggests that assessments, if used properly in the online environment, can increase student engagement by emphasizing student growth and learning over time. This may be helpful in keeping students and families motivated when learning in an online environment (Darnell, 2013; DiPietro et al., 2008).

### What strategies did teachers use to assess students in an online environment?

**Teachers measured student learning using a variety of assignments and checks for understandings.**

In nearly all observations, teachers selected for observations used verbal questioning and/or the completion of assignments/tasks to assess student understanding of the content. In fewer classrooms, observers noted the use of polls, formal assessments, and projects to assess learning.

Figure 6. Strategies used to assess student learning (n=118 observations)



## What are the key takeaways about assessing students in an online environment?

### Key takeaways in this section include:

1. Gamification of quizzes and checks for understanding engaged students in assessment-related tasks.
2. Students were often asked to respond to teacher-led questions or complete checks for understanding, such as by completing exit tickets using the “chat” feature.
3. The use of hand gestures also helped teachers to assess understanding, especially in classrooms with younger students.

### Gamification of quizzes and checks for understanding engaged students in assessment-related tasks.

In several cases, rather than using a Google Form or a worksheet-style assessment, teachers used Nearpod, Pear Deck, or the Smart Learning Suite to gamify their assessments and checks for understanding. For example, teachers added links to gamified quizzes through the Kahoots and Quizizz platforms where students could compete with each other while also demonstrating mastery of content. In one case, the observer noted that the “quizzes that students ‘earn’ are both an incentive and a check for understanding.” Another observer wrote, “Kahoots was a great way to quiz students, keep them engaged, and assess gaps of content mastery.”

Gamification of assessments appeared to be most successful when teachers used a platform that allowed them to access individual student responses after the end of the quiz so they could address the needs of individual students. Students also benefitted from additional feedback when teachers reviewed the answers to the most frequently missed quiz questions at the conclusion of the “game.”

### **Exit tickets using the chat feature were used as checks for understanding.**

Many observers noted that teachers selected for observations used the chat feature to support checks for understanding and other small-scale formative assessment. Two particularly successful strategies for using the chat box to assess understanding were (1) having students respond directly/privately to the teacher (via direct message) and (2) asking students to all enter their responses at the same time. These strategies allowed teachers to check students' understanding without students seeing their classmates' responses.

For example, some teachers asked students to type their answers in the chat box but not to hit "enter" until the teacher counted to three. Once all students said that they had something written in the chat box, the teacher counted to three, the students hit enter, and all of the responses showed up at once. Lastly, several teachers randomly selected students to explain the responses that they typed in the chat as a way to ensure that students understood the content.

### **Hand gestures also helped teachers to assess understanding, especially in classrooms with younger students.**

On several occasions, teachers selected for observations asked students to hold up fingers to correspond to an answer choice on a short formative assessment. For example, teachers would ask the question verbally and tell students to put up 1, 2, or 3 fingers to indicate the answer that they thought was correct. This method was most effective when teachers typed the question in the chat box or displayed it on the screen so that students did not have to remember the question and answer choices. Some teachers also used the "count down" method to ensure that students did not change their answers based on their classmates' responses. A couple teachers took screen shots of students holding up their gestures. Many teachers also relied on the "thumbs up, thumbs down" approach to determine which students understood the content and which may need additional support.

### **What were the challenges to assessing students in an online environment during the fall observations?**

#### **In most classrooms, there were at least one or two students who did not complete or participate in informal and/or formal assessments or checks for understanding.**

Many observers noted that there were at least a few students in each classroom who were not active in the lesson, did not complete the assignment or assessment, and did not engage in discussion. In most cases, the teacher encouraged all students to participate but could not fully control whether or not a student completed the assessment-related task. Most teachers provided various response options for students who were having technical issues, such as answering a question via chat rather than on a Jamboard. However, there were still some students who did not participate and it was unclear how teachers could meaningfully address this issue in the online environment.

## Conclusions

In October and November 2020, researchers conducted 118 observations of 56 teachers at 10 schools that spanned grade levels and subjects with the goal of better understanding practices that may improve the instructional experience of students in the online environment. The schools and teachers chosen for our sample were selected because they were perceived as implementing online instruction effectively. Thus, this sample is not meant to represent practices implemented at all schools but a purposeful sample used to highlight practices that may be useful to scale District-wide. Additionally, teachers have continued to learn and innovate throughout the year. This summary of observations represents one snapshot in time relatively early in the school year

The teachers we observed were overwhelmingly positive in their approach to online instruction and embedded practices in their online classrooms that established and supported a sense of community and belonging, despite the physical distance from their students. Specifically, teachers embedded opportunities for students to build positive relationships with each other; offered incentives that encouraged student participation and engagement; provided students with clear expectations for behavior; and consistently encouraged student participation. Teachers also recognized when students needed a break from the screen and created opportunities to use “break time” for student socialization and wellness. Teachers also regularly inquired about students’ social-emotional wellbeing by integrating various online response options such as “emoji checks.”

Most teachers in our sample used technology to deliver instruction using multiple formats while monitoring student behavior and participation. Teachers integrated delivery modes such as PowerPoint slides, screen sharing, videos, and white boards. Many teachers relied on the use of multiple computer screens to effectively monitor students and present content at the same time. This variation in modes of presentation allowed students to learn content in different formats while collaborating with peers to complete assignments and engage in academic discussions. If online instruction continues, the district should consider the optimal platform to integrate several instructional approaches and explore the use of Nearpod and Pear Deck compared to the district-purchased Smart Learning Suite.

Engagement appeared to be higher when teachers employed activities that required students to authentically interact with the academic content. These types of activities included classroom discussion, collaborative projects, the use of manipulatives, interactive worksheets, games, and experiments. Like the traditional classroom, students were more most engaged when expectations were clear and students were accountable for the completion of an assignment. For example, small groups were an effective way to increase engagement through student collaboration, but required clear tasks and frequent monitoring. Students seemed most focused and accountable when they know that they would be required to answer questions related to the content or to discuss their work. Assigning classroom roles and responsibilities also translated well to the online classroom and provided students with a sense of ownership over their virtual space.

During observations, teachers also used a diverse array of assessment strategies. Gamification of quizzes and checks for understanding were particularly engaging for students. Students were often asked to respond to complete checks for understanding using the “chat” feature. Additionally, the use of hand gestures also helped teachers to assess understanding, especially in classrooms with younger students. Observers also noted ways that teachers provided support online. Specifically, teachers provided students with multiple opportunities for one-on-one assistance and individualized support. Teachers were most effective at providing support if there was a clear way to identify students who required it, based on assignment performance or an established communication strategy.

Although overall the lessons that we observed appeared to be generally effective for the students who were present and participating, even in these exemplar schools and classrooms, they were not without challenges. Specifically, some students’ home environment were a distraction that could not be controlled by the classroom teacher. Some students struggled to focus and communicate because of the activity in their immediate environment. Additionally, some students had ongoing challenges related to technology and internet connectivity that, although limited, drastically reduced the ability of some students to fully participate in learning online. Lastly, without a clear and consistent strategy, it may be difficult to accurately assess who needs individual support. This is particularly true with oral language development which relies on teachers seeing and hearing students speak.

In an upcoming brief, we will continue to explore the work of staff at these schools to learn about the ways in which school leadership has organized around online learning and the procedures, strategies, and supports that are in place for their school communities. A brief summarizing our findings is expected to be completed and published in late Spring 2021.



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