


Chapter 6

Online and Hybrid Student Engagement: A Duoethnography With EdTech

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ABSTRACT

Virtual hybrid education is challenging for the average educator and less known with the additional stresses of emergency remote education. In most cases, educators rely on trial-and-error to determine what works best in online and hybrid instruction. Through this applied research, two education technology specialists engage in a duoethnography of their support over the 2020-2021 pandemic year. Having assisted hundreds of educators in an urban K12 school district with online and hybrid engagement practices, this study answers the question, “How can technology help facilitate student engagement in online and hybrid environments?” This chapter is built from narrative analysis and provides research-based and practitioner-focused promising practice techniques and real-world solutions to educators in building and maintaining a positive digital culture.

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INTRODUCTION

Over 15 months of the COVID-19 pandemic (March 2020-June 2021), Education Technology (EdTech) Specialists in America's K12 school districts culled information from online resources and one another to help support the extreme and rapid changes in emergency remote education (ERE). From crisis instruction and maintaining continued learning, to hyperfocused provisions for student engagement, EdTech Specialists provided promising practices with digital tools through supporting K12 school districts across America. While reports (Joy, 2021; Liberman, 2020; Office of Civil Rights, 2021; Richards, 2020) still focus on the lack of virtual and hybrid learning environments, pedagogical practices with technology have shown exponential growth over the pandemic year. Despite this growth, students' engagement has waned (Khlaif et al., 2021).

This chapter focuses on digital leadership for online and hybrid student engagement, as supported by Education Technology (EdTech) Specialists. Through a duoethnography of two sitting EdTech Specialists, it aims to answer the research question, "How can technology help facilitate student engagement in online and hybrid environments?" It will also answer these four subquestions:

- What resources were provided to educators to help pivot to online and hybrid teaching?
- What type of leadership was needed to help educators re-engage their school populations in online and hybrid environments?
- What strategies assisted most with student engagement?
- Which digital tools assisted most in online and hybrid student engagement?

BACKGROUND

Distance learning and online education has been embraced by school systems for years, but emergency remote education (ERE) came with the pandemic school shutdowns of 2020. The chapter first discusses this phenomenon and how it created a pandemic pedagogy. During ERE, student engagement was found waning--no matter how it was measured. After this discussion, it is then necessary to introduce the Technology Acceptance Model as a conceptual frame for which tools and strategies were used to catapult engagement. Finally, a discussion of crisis leadership ensues, leading to the management of professional development. This literature review will lend to a foundation for duoethnography, to study how technology helps facilitate student engagement in online and hybrid environments.

Emergency Remote Education and Pandemic Pedagogy

A pandemic pedagogy includes practices educators have undertaken in response to COVID-19. Pedagogies, during these times, have been referred to as emergency remote education (ERE). Hodges, et al. (2020) define ERE as a temporary shift of instructional delivery to an alternate delivery mode due to crisis circumstances, in contrast to distance learning experiences that are planned from the beginning and designed to be online. They continue by describing ERE as “the use of fully remote teaching solutions for instruction that would otherwise be delivered face-to-face or blended, and that will return to that format once the crisis or emergency has abated” (Hodges, et al., 2020, sec. 3).

Student Engagement

During ERE, student engagement was decreasing. There is very little research that focuses on attendance or engagement in K–12 online settings (Chambers, et al., 2020). The field initially tried to measure engagement via attendance, but found this method to be ineffective, as three million students had not yet checked into class within seven months in a sum of American school districts (Korman, 2020). Carminucci, et al. (2021) found that attendance rates dropped compared with previous school years, “with lower attendance rates in districts that were not providing primarily in-person instruction, as well as high-poverty districts and districts serving mostly students of color” (p. 1). As there is no established definition of “attendance” in an online environment (Chambers, et al., 2020; Sawchuk, 2021), this had to be established per district within school communities.

Some school districts measured engagement by the participation equivalent of online “instances.” However, there was scant consistency to establish a firm baseline. Khlaif, et al. (2021) posit that the major factors that influence student engagement are teachers’ presence and quality of content, in addition to external factors of parental concerns, norms, and traditions. Kurt, et al. (2020) found four themes associated with the factors affecting student engagement: instructional and student-related factors, along with those related to the learning environment and policies. Studies on engagement also uncovered that while students may be physically present and appear to be actively involved in using the technology tools, in reality, they might still be cognitively disengaged from the learning goals (Linnenbrink & Pintrich, 2003). Engagement should create an environment of active time-on-task learning, engaged in thinking, reflecting, and effortful mental activity (Wartella, 2015, as cited in D’Angelo, 2018). Studies have supported the idea that overall student engagement in learning is enhanced by the implementation of instructional technology (Mo, 2011; Schindler, et al., 2017).

Crisis Leadership

There is research which focuses on crisis management, but hardly any that focuses on crisis leadership. Klann (2003) differentiates the two by saying that crisis management relates mainly to operational issues, while crisis leadership principally deals with how leaders handle the human responses to a crisis. Senge, et al. (2008) described how leadership in these complex and challenging times is about creating capacity for adults to shape the future they desire, individually and collectively. From organizational and institutional theory, Shaked (2021) firmly situates buffering and bridging as part of crisis leadership. Buffering is defined as school leaders responding to external influences and needs by trying to insulate themselves, versus bridging referring to attempts to tailor organizational activities according to external demands and expectations (Kim and Kim, 2016). Crisis leadership is adaptive, demanding communication, clarity of vision and values, moving on actionable intelligence, and forging caring relationships.

Teaming

Edmonson (2018) defines teaming as empowering to work for a common goal collaboratively, instead of working for a leader. In teaming, a leader overcomes a basic human challenge of knowing everything and relies on collaboration with one another as a team as the best method to spark curiosity and solve challenging problems. Flowers, et al. (2000) concluded that in teaming, the team size, amount of common planning time, and length of time together as a team influence classroom instruction. Flowers, et al. (2000) continue, for teaming to be effective, teacher choice, curriculum-driven design, and administrative support are necessary. These factors must be taken into consideration when looking at teacher leadership during ERE.

Professional Development

A study conducted by Guskey (1988) suggested that the majority of teacher professional development programs fail because they do not take into account two crucial factors: (1) what motivates teachers to engage in professional learning, and (2) the process by which change in teachers typically occurs. Lam, et al. (2010) found that autonomous motivation (intrinsic and identified) was highly and positively connected with positive attitudes towards persistence in innovative teaching; while the relationship with negative attitudes was high and negative. Using autonomous motivation can further the advancement of educators to try new innovations such as blended learning in the classroom.

MAIN FOCUS OF THE CHAPTER

The school organization studied is an urban K12 school district with approximately 24,000 students (85% Latino and 15% African-American), more than 80% of which elected to continue with emergency remote instruction during the 2020-21 school year. With assistance from district partners and sponsors, the district employed a 1:1 device initiative, addressing the technology hardware equity gap during crisis instruction. The knowledge gap between teachers and technology integration might have widened the support gap for students. This study addresses stop-gap measures as noted by the school district's Education Technology (EdTech) Specialists.

Methods for the study include a duoethnography between two K12 EdTech Specialists of their districtwide support over the pandemic school year. Specialists are personnel who have deep knowledge of a discipline and are able to support others in that knowledge. EdTech Specialists at the K12 level were chosen researchers, as their special teaming relationships during ERE allowed heightened perspectives on professional development, instructional engagement and crisis leadership during the pandemic. Having assisted hundreds of stakeholders with online and hybrid engagement practices, this study answers the question, "How can technology help facilitate student engagement in online and hybrid environments?" These methods support the discovery of practitioner-focused promising practices in building and maintaining a positive digital culture.

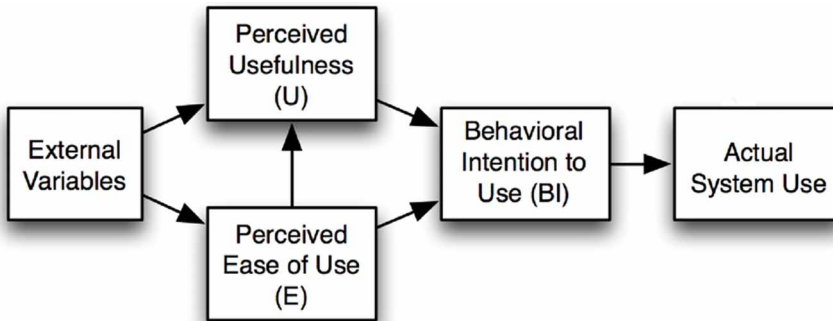
Issues, Controversies, and Problems

With engagement as the manifested behavior of being motivated, a few technology integration models were considered, due to their attention to behavioral attitudes in technology usage. Davis' (1989) Technology Acceptance Model (TAM) decodes how users come to accept and use technology. The model suggests that when users are presented with new technology, two major factors influence their decision about how and when they will use it, perceived usefulness and perceived ease-of-use. There have been two modifications to this model. The first modification (Davis, Bagozzi, and Warshaw, 1989) allows for users' intent to match actual use. The second modification (Venkatesh & Davis, 1996) as shown in Figure 1, found that external variables (i.e., the multiplicity of variables from pandemic life) affect both perceived usefulness (i.e., "Can this help re-engage my learners?") and perceived ease of use (e.g., "On top of every other pandemic balance, can I learn and maintain this systems use?") and were found to have a direct influence on behavior intention (i.e., engagement), thus improving upon the first modification of TAM and eliminating the need for the attitude construct.

Online and Hybrid Student Engagement

Figure 1. TAM, second modification

Notes: The second modification of the Technology Acceptance Model (Venkatesh & Davis, 1996) considers the pandemic as external variables, with perceived usefulness and ease of use contributing to engagement as a behavioral intention. Actual system use will be revealed in the study's results.



Rather than framing the study within normative and oppressive discourses, the two EdTech Specialists engaged in a contextual collaboration (Lei, et al., 2004) of their support for student engagement during ERE. During a duoethnography, abilities, knowledge, and experiences are recalled and explored in conversation with another (Sawyer & Norris, 2012). The foundational principles of this method are its polyvocal nature, the examination of life history as curriculum, and the intent not to profess but rather to learn from differences (Sawyer & Norris, 2015).

Having supported hundreds of educators over this pandemic year, their first-hand perspectives created a phenomenological ethnography. While borrowing from other qualitative methods, duoethnography is distinctive in its emphasis on the researchers and the interacting narratives as the site of the research (Brerault, 2016). The data was collected and analyzed for four months through an inductive process. Specialists met bi-weekly over Zoom for one-hour recorded conversations, in response to written narratives they responded to the week prior. The researchers started by answering the research questions themselves, from their expert knowledge. They then responded to one another on a collaborative document, using the 4 As Protocol (National School Reform Faculty, 2015), where they noted assumptions, agreements, arguments, and aspirations with their partner's text. As four recursive recorded discussions and written accounts evolved, a narrative analysis was used to ascertain where information converged or diverged.

SOLUTIONS AND RECOMMENDATIONS

Discussion of results surfaced themes that revealed strategies and digital tools adopted for online student engagement. Through dialogic engagement, we discovered answers to the research question, “How can technology help facilitate student engagement in online and hybrid environments?” We also answered four subquestions:

- What resources were provided to educators to help pivot to online and hybrid teaching?
- What type of leadership was needed to help educators re-engage their school populations in online and hybrid environments?
- What strategies assisted most with student engagement?
- Which digital tools assisted most in online and hybrid student engagement?

RQ1: How Can Technology Help Facilitate Student Engagement in Online and Hybrid Environments?

Our literature review supports students’ engagement through technology behaviorally, emotionally, and cognitively. During our study, we found two ways in which technology assists with virtual student engagement, organizationally through collection and access to data points to drive decisions, and instructionally through the adaptation of tools or learning tasks through the integration of technology. Organizationally, technology helps educators collect, access, and analyze data for decision-making leading to greater engagement. Instructionally speaking, the two major areas in which technology can help facilitate student engagement in online and hybrid environments speak to generational engagement practices and alleviating pandemic disengagement.

Alleviating Pandemic Disengagement

During ERE with online and virtual hybrid environments, it was essential to understand digital engagement with students, as just being supplied with the technologies did not impact engagement. Some students were supplied with devices and did not log into class. Many students who logged into class did not turn their cameras on in videoconference. Some students who may have turned their cameras on did not show their faces. Students who showed their faces did not necessarily speak. Some students who did speak had to be cajoled. “In addition to knowing the research, having led thousands of PD sessions in my career--hundreds online, I had experiential knowledge of student engagement,” (personal communication, Researcher 1, May 14, 2021). “One of the biggest challenges was getting students to actively participate during synchronous time either on Google Meet or Zoom. As I did my observations...I

Online and Hybrid Student Engagement

noticed students were being called upon during instruction but were not present or refused to participate by turning on their cameras during the attendance roll call” (personal communication, Researcher 2, May 20, 2021).

Influencing TAM’s perceived usefulness (Davis, 1989), as practitioner-researchers, we helped teachers determine which technologies would be the most engaging, and how best to use those technologies for student engagement. We advised how traditional lectures could be videotaped with embedded questions; classroom discussions could be moved to a text-response thread application or video discussion platform; teachers were also assisted on how to manage a digital workflow through a learning management system. Educators were also supported with assessment tools to conduct formative and summative assessments virtually.

Generational Engagement Practices

K12 schools presently serve Generation Alpha and Generation Z (Jha, 2020), students who have never known a life without information technology. We learned from the research that students’ brains in this generation have been rewired to a media-enhanced neomillennial learning style (Rodgers, 2012). This tells us that technology is not only what engages this population, but it is ubiquitous to their learning. Suggestions to support student engagement with media-rich programs were made throughout ERE. Creating breakout sessions on Zoom or Google Meet to emulate a blended learning environment, students worked in breakout rooms to complete various tasks and worked on specific media-rich assignments. Using videos from YouTube or self-made videos using Screencastify, teachers were encouraged to assign video lessons using EdPuzzle to ensure accountability and gather data on student performance. Teachers were also trained on how to use programs such as Flipgrid, where filters can be applied to student videos and can be used to mimic popular social media tools like TikTok or Snapchat. Just because technology is used, however, does not mean the students are engaged (Bergdahl, et al., 2019).

Data-driven Decisions

There were many tools already purchased by the District which led to teacher collection and use of data. During the pandemic, educators were encouraged to use data-rich programs such as Formative and Nearpod. These programs helped teachers by leveraging data-driven technology with teacher instruction/support. With the accessibility of personalized learning and engagement data through these apps, professional development sessions were created to continue to support teachers through their use. Unfortunately, many of these programs did not connect with the teacher’s Learning Management System, so they found the interpretation of data

to be cumbersome. The perceived usefulness of such programs quickly diminished and educators looked to alternatives for formative/summative data. As advocates of tools purchased by the District, the education technology department focused on particular tools in lieu of other tools that educators might have perceived as more useful or easier to use.

Recommendations: Continue Promising Practices with Technology

As shared in our literature review, engagement should create an environment of active time-on-task learning, engaged in thinking, reflecting, and effortful mental activity (Wartella, 2015, as cited in D'Angelo, 2018). We recommend that educators continue the use of technology to facilitate student engagement, ensure that they are gathering actionable data points through the technological choices made; be tailored to the generational group; and bolster student engagement by leveraging technology to meet students' needs, interests, and curiosity.

RQ2: What Resources were Provided to Educators to Help Pivot to Online and Hybrid Teaching?

We found three major areas in which educators were provided resource services to pivot to online and hybrid teaching: district structural support, hardware, and professional learning. EdTech Specialists became pedagogical and methodological experts in shaping ERE. EdTech needed to support not only the physical structures of ERE, but professional learning as well. From the provision of distance learning websites, to the establishment of technology education platforms and professional learning plans, EdTech specialists were part of the K12 build for pandemic pedagogy.

District Structural Support

From the provision of distance learning websites to the establishment of technology education platforms and professional learning plans, EdTech specialists were part of the K12 build for pandemic pedagogy. Besides the moral support, educators were guided by a comprehensive ERE website built by the EdTech Specialists, including FAQ sections for parents, guides for students, and step-by-step pacing-aligned lessons for classroom teachers. An internal survey found that parents, teachers, and students extensively used the website resources.

Hardware

The district provided computers, speakers, interactive touch panels, and education technology programs to help educators pivot to online and hybrid teaching. School site administrators were tasked with providing teachers with devices needed to support distance learning. Certain school sites equipped teachers with a second monitor, speakers for their devices, webcams, and microphones to walk around their hybrid classes.

To prepare for hybrid instruction, the district also purchased and provided each classroom teacher with an interactive touch panel. These interactive panels were 60-inch television monitors with computer capabilities. Some of the panels were mounted in classrooms, and others were mounted on carts for more classroom mobility. Educators were then untethered from their desks with Zoom, and able to teach from the interactive panel and share their screen in order for students in the classroom and at home to see/hear the instruction. Feedback gathered from the Education Technology Team during office hours revealed that while a few teachers appreciated the interactive touch screens, most did not incorporate it into their instructional practices. We conclude that this is because the rollout was done hastily, the trainers were not properly trained, and no one was consulted about the purchase before rollout for planning. Teachers were already overwhelmed with creating digital content and shifting to remote teaching and this innovation was met with frustration.

Professional Learning

EdTech needed to support not only the physical structures of ERE, but professional learning as well. There was a need to offer just-in-time PD during ERE to support the aim of professional development, as well as support instructional systems during virtual remote instruction. Cavanaugh and Dewese (2020) offer an analysis of hundreds of thousands of search terms during the crisis instruction months of the pandemic, and discovered a large shift in search terms from the year prior, suggesting that educators felt the need for support in their new digital learning environments. UNESCO (2020) found that “teachers were not equipped to organize, deliver and assess distance learning. They lack[ed] digital skills and readiness for employing distance learning pedagogies.” For these reasons, teacher training was provided throughout the 2020-2021 pandemic school year.

EdTech Specialists exclusively offered professional development to all 2000 teachers each day, for four hours a day, over the first three months, then one session a day for the remainder of the school year. This was in addition to office hours, supporting general questions in Zoom, and individual questions and concerns through calendared appointments. Professional development was targeted to the supported

online tools and pedagogies for ERE, some of which were in place prior to the pandemic. EdTech Specialists focused the professional development offerings on the educational technology tools and curriculum resources selected and purchased by the district (i.e., Nearpod, Flocabulary, Formative, Discovery Education) in order to support the existing blended learning initiatives. These tools were transitioned to support online/hybrid learning.

There was obvious influence from the Education Technology Department on a teacher's perceived ease-of-use, even though teachers' direct feedback revealed the technology's perceived usefulness. Remembering that a multiplicity of external variables (i.e., pandemic life) affected both perceived usefulness and perceived ease of use (Venkatesh & Davis, 1996), there was a direct influence on behavior intention (i.e., engagement).

Recommendations: Social-Emotional Learning and District Collaboration

Before transitioning from crisis instruction to ERE, there was a surfaced need to support students with social-emotional learning (SEL). Initially, there were no curated SEL resources available to educators (i.e., HeadSpace, Calm, etc.). By Fall 2020, some resources were being shared amongst school districts, and eventually posted on states' websites. We recommend that schools and districts take advantage of these resources to support students and educators as we return from the pandemic stay-at-home orders.

While the district came together to produce a united front and comprehensive services, internally there was little interdepartmental collaboration. Different departments tried to support, according to their specialty, in silos; interdisciplinary collaboration was nonexistent. The schism resulted in work being doubled. We recommend that learning organizations disseminate the vision and mission to the whole group before individual departments work on a collective assignment.

RQ3: What Type of Leadership was Needed to Help Educators Re-Engage their School Populations in Online and Hybrid Environments?

The goal for educational technology leaders during COVID-19 was to ensure students were learning using remote instruction. Banathy and Jenlink (2004) argued, "accepting the responsibility for creating new systems of education means committing ourselves to systems inquiry and design and dedicating ourselves to the betterment of education." The researchers found three types of leadership that helped

Online and Hybrid Student Engagement

educators re-engage their school populations in online and hybrid environments: Crisis Leadership, Teaming/Teacher Leadership, and Adaptive Leadership.

Crisis Leadership

Upon pandemic school closure, district leadership needed to act quickly to adapt structures for instruction and guide educators to remote teaching. Communication was key. Quick action was done through the creation of a comprehensive website for all stakeholder groups to access. Within the teacher portion of the site, there were a myriad of digital resources to guide curriculum planning, instructional pedagogy, and assessment strategies. Within the student portion of the site, students were able to log into their appropriate learning management system and learn from the specialized online guides for accessing their instructional material. Within the parent portion of the site, families were able to get pertinent information regarding resources, technology tutorials, and ways to support their students at home. Communication tools such as Parent Square and Aeries Parent Portal were also used to communicate with parents during ERE. Site administrators were provided with small group sessions to lead their stakeholders through the website of resources.

Teaming

Teaming was essential for the Educational Technology Department to quickly create remote teaching assets, protocols, procedures, and professional development. District leadership was looking for expertise in digital learning and leaning towards our department for support. Edmonson (2012) describes teaming as when part of a fast-moving work environment, the people who have the skills and flexibility successfully act collaboratively when and where challenges arise. Teaming was essential for EdTech Specialists to create resources quickly and effectively to support stakeholders during ERE. Using each Specialist's strengths to come up with solutions of support was essential. This was made possible through the act of teaming.

Specialists also teamed with classroom teachers. Working alongside teacher leaders during ERE was indispensable in supporting each other. Teachers shared what was useful and easy to use in terms of technology (both hardware and applications). Other instructional District specialists sought out teacher leaders to create digital content that supported the curriculum. Teaming helped solidify tool and strategy selection due to their perceived usefulness and ease of use in the classroom.

Adaptive Leadership

According to Northouse (2019), six leadership behaviors play a pivotal role in the process of adaptive leadership: get on the balcony, identify the adaptive challenge, regulate distress, maintain disciplined attention, give the work back to the people, and protect leadership voices from below. Our district employed these six strategies as such:

- get on the balcony: big picture view of the impact of the COVID-19 at the school district discussed with the school board, local education agency, and local and state levels
- adaptive challenge: meeting the needs for remote support with previously-adopted tools that were quick to implement
- regulating the distress: providing professional development, digital curriculum, information, and resources to stakeholders
- maintaining disciplined attention: provided weeks of lessons and ongoing professional development for educators
- give work back to the people: encouraged teachers to lead professional development efforts by sharing their promising practices
- protect leadership voices from below: teachers and administrators were encouraged to share, whole group, what was working at their site

Recommendations: Immediate and Constant Communications, Digital Citizenship Practices

While the impacts of COVID-19 on the learning organization were discussed internally among management, during the first month of lockdown, other stakeholder groups were left in a lurch. Site administrators were communicated with daily, as their assignments were to stay on their sites to field community response. Teachers called our helplines to understand what to access and how, because there was no clear communication to this stakeholder group for weeks. While district leadership may cite negotiations with the union, this still did nothing to mitigate the lack of communication with an essential stakeholder group. Within a month, needs surveys for technology and internet access were solicited from parents. Community partners reached out with help they could afford (e.g., laptops, funding for wifi, platforms for virtual instruction, etc.), and we eventually found space for their support within our ERE plans. Going forward, team leads need to over-communicate during a crisis, not under-communicate.

There was also missed opportunity with digital citizenship. By not strategically embedding digital citizenship into the online curriculum, we missed the chance to

Online and Hybrid Student Engagement

lay foundational digital attitudes and practices. The year held instances of negative online behaviors which could have benefitted from setting up norms and procedures for proper digital citizenship.

We also feel that teachers' mental well-being was neglected. Before transitioning from crisis instruction to ERE, there was a surfaced need to support students with social-emotional learning; as ERE progressed, the need became greater. However, there was no social-emotional support offered for educators experiencing the same trauma. In and out of crisis, we know the value of Maslow's Hierarchy of Needs. Focusing on the mental safety of your staff would also provide for the social-emotional stability of your students.

RQ4: What Strategies Assisted Most with Student Engagement?

There were multi-tiered systems of support to engage students. The researchers found five thematic areas in their narrative analysis, addressing the strategies found to assist most with student engagement: the effectiveness of the educator; whether the educator used collaborative activities; effective planning; providing social-emotional connections; and engaging in project-based learning.

Effective Educator

Research confirms that the most important school-related factor that influences student outcomes is the quality of teaching (Aaronson et al, 2007; Clotfelter, et al., 2007, Khlaif et al., 2021). We noticed effective virtual remote education being done by educators who previously had well-structured classrooms, with strategies for student engagement. If they did not find themselves digitally-astute, effective teachers sought out knowledge--on their own, or from us as Specialists--to supplement their digital instruction, versus their content instruction. These tips helped them determine perceived usefulness and ease of use. Appreciating the autonomy pandemic pedagogies brought, these effective teachers used open educational resources, as well as those provided by the District, to meet students' needs. They were soon implementing educational technology tools to engage their students during distance learning, mimicking some of the effective practices they would implement in their classrooms.

Collaborative Activities

There was a stark difference in the classrooms of teachers who used collaborative activities versus those who did not. Teachers who taught without collaborative

activities essentially had no student accountabilities during ERE. Monitoring via videoconference instruction looked different than how it might be applied in a physical classroom. The digital and phytical environments required use of collaborative platforms to understand which students were working, and how they were understanding content, as videoconferencing breakout rooms did not allow a teacher to monitor their students. Perceived usefulness was soon seen in classroom accountability tools such as the Google Suite, Jamboard, and Whiteboard.fi, which were used to monitor students' progress and ensure they were on task during classroom instruction both synchronously and asynchronously. Effective collaboration was seen throughout the district during ERE by those educators who leveraged tools for collaboration. Teachers who did not use such collaborative tools reverted to a more teacher-centered approach.

Effective Planning

Hundreds of support calls from teachers helped us understand that ERE took hours longer to plan for, than did traditional classroom instruction. Teachers now had to adapt their instruction for virtual remote engagement, and plan for connection activities within their chosen videoconferencing system. They had to plan for whole group engagement in a virtual environment; breakout room collaborations with immediate accountabilities; differentiating for students whose virtual engagement was challenged; and managing digital platforms. Teachers needed to align their lesson activities with digital tools that not only enhanced the lesson, but that they perceived as easy to use. Teachers who did not do this planning relied solely on the District'd weekly digital curriculum, aligning the text's pacing with specific educational technology tools for engagement.

SEL Connections

Those educators who opted to focus upon connections before curriculum fared better with their student engagement practices. One of our teachers expressed, "I just let the kids get on and talk for 10 minutes a day. They missed one another so much, and everything in their world was no more; they needed to connect," (personal communication, October 7, 2020). That teacher saw an average of 90% of his students online everyday through the pandemic year. Other teachers chose tools to celebrate their students' grades (e.g., ConfettiCanon), sense of being (e.g., Student of the Week acknowledgements), and planned online games for students to participate in and build connections.

Project-Based Learning

Prior to the pandemic, some teachers had already engaged in Project-Based Learning (PBL). Teachers who adopted Project-Based Learning during ERE also found creative ways to engage students with impactful projects that solved real-world problems. Educators had students collaborate as they explored real-world problems and modeled solutions through digital tools. From Minecraft Education worlds addressing climate change, Scratch projects addressing racial healing, and a variety of other tools to capitalize on the time, students addressed these challenges through digital solutions. Sometimes students were supported by their teachers, sometimes by the EdTech Specialists, and sometimes through industry partners. These projects let the students create and showcase their projects for wider digital audiences. Educators saw this perceived usefulness and supported their students to more PBL during the pandemic year.

Recommendations: Master Teacher Lecturer and Roll-Carrying Teacher as Learning Facilitator

As was adopted in another school district in which we connected for resources, an idea that might have had a greater positive impact on our students was to employ a Master Teacher the first few weeks of crisis instruction. This Master Teacher would be the subject/grade level representative for the school/district. Core lesson concepts would be given via webinar, then the roster-carrying-teacher would follow up with the digitally-supported lessons. This might have helped all teachers onboard into this digital world, without the projected learning loss students received from weeks of adjusted instruction. As Klan (2003) and Senge, et al. (2008) posit about crisis leadership, designating Master Educators to lead the change would help the bulk of your stakeholders to adjust appropriately, so that their actions might be stronger as situations progress.

RQ5: Which Digital Tools Assisted Most in Online and Hybrid Student Engagement?

The researchers found three categories of digital tools which assisted in online and hybrid student engagement, those within the District context, and tools of engagement for students and staff. Educators who utilized such tools reported greater satisfaction in supporting their stakeholders in the online and hybrid environments. After receiving professional development or watching a video tutorial, the educator assessed the tool on whether it is easy to use and would it be useful during ERE.

After the determination was made, the educators would ask for additional support in attempting to use the tool or successfully implement it during classroom instruction.

District Context

The two most important tools used during ERE were our online content management systems, Google Classroom and Seesaw. Our district is a Google-District, but not all educators had adopted its use. When the realization of ERE was upon us, educators had to adopt a content management platform that would be supported by district instructional services. Google Classroom, as a free robust platform, was chosen to complement the District's heavy use of Google tools. Seesaw was favored by teachers of early learners.

The next essential set of tools that helped support all stakeholders were the videoconferencing systems. The EdTech Department opted to support Zoom, as the most robust tool in the market at the time, and Google Meet, as the productivity suite companion. Both videoconferencing systems helped onboard and sustain stakeholders' engagement during ERE. Serving as the virtual classroom, both platforms got more robust during the school year, and teachers began to take advantage of the online whiteboards, virtual backgrounds, breakout rooms, and polls.

The next set of engagement tools was the adopted productivity suite. While most of our business offices preferred the Microsoft Office Suite, all instructional departments defaulted to the Google Suite. The ease of collaboration and the ample professional development provided in Google Suite resulted in the "ease of use" by educators throughout the district. The district also invested heavily in Chromebooks, which as a Google product, work seamlessly with Google Suite.

The district had already adopted certain digital tools before the pandemic. These tools were chosen for purchase due to their alignment with District goals towards blended learning. Teachers used educational technology tools such as Nearpod, Formative, and Flipgrid. As employees of the District, part of our jobs were to use the tools purchased. Thus, we supported teachers using Nearpod for interactive lectures, formative assessment, and student engagement, then to use the real-time data to pivot instruction. We also supported teachers in the use of Formative to auto-grade assessments/activities, provide instant feedback and provide the educator with accurate data for student learning. Educators were able to view data as students responded to each question; advanced use also allowed chat with students using Formative's premium features. Flipgrid training was focused to support educators in providing digital discussion and provide students with a platform to socialize via video submissions. Students and teachers were able to respond to each other's videos and comment, much like the popular social networks being used outside the classroom.

Online and Hybrid Student Engagement

Due to District adoption, we had already published online guides and videos to support educators' knowledge for use. Additionally, coaching and professional development sessions were planned daily the first few months, to support stakeholders' ongoing knowledge of these tools during ERE. EdTech Specialists helped users see the perceived usefulness of each adopted platform.

Tools of Engagement for Students

Students used whatever their teachers designated for them to use. Mainly, students used the videoconferencing platform, the Google Suite, adopted applications from the District, then any OER their teachers were either guided to or adopted on their own. The videoconferencing platform and productivity suites were foundational to instruction, and the levels of engagement depended on the designed use by the teacher. Adopted applications will be discussed in terms of student engagement. OER will be discussed in terms of perceived usefulness, or ease of use.

Adopted applications were meant to engage students in blended learning environments even before the pandemic. Programs such as Nearpod can engage students through creating activities for participation during live instruction of a presentation. Flipgrid allows students to have video discussions or text responses, creating student agency and fueling creation in the classroom. In addition, Flipgrid can be used as an engagement tool, to bring out students' creativity through recordings and filters, mimicking a TikTok or Snapchat video. Formative can engage students through getting instant feedback on assignments and assessments.

Open education resources are vast. We will discuss those we saw widely adopted, and their observed effects on student engagement. Gamified formative assessments like Kahoot, Quizzlet, Blooket and Gimkit provide educators with a gamified alternative for vocabulary and content review. Tools like EdPuzzle gave educators ways to transform videos into instructional videos with built-in assessment questions.

Tools of Engagement for Staff

Educators adopted instructional engagement tools based on their perceived usefulness and ease of use. Three sets of tools were ubiquitous to virtual remote instruction, so their perceived usefulness was direct: videoconferencing platforms, content management systems, and productivity suites. The videoconferencing platform and productivity suites were foundational to instruction, so directly matched perceived usefulness. The depth to which Google Meet or Zoom were used for engagement was dependent on the teacher. Most teachers just learned the basic use to get on and instruct using more familiar means. Some teachers learned the advanced features of these programs to engage their students with polls, the online whiteboard, shared

videos, and more. Similarly, Google Classroom and Seesaw were foundational to content management, but offered no further engagement; they directly matched perceived usefulness. Lastly, productivity suites such as Google Docs, Sheets, Forms, etc. helped teachers manage their online content and distribute and receive digital copies from their students. Adopted applications will be discussed in terms of student engagement. OER will be discussed in terms of perceived usefulness, or ease of use.

District-adopted applications which helped teachers engage students were the interactive television panel, GoGuardian, and the Google Suite. The Clear Touch Interactive panel assisted educators by connecting online students with the students in the classroom for hybrid instruction. It provided the means to facilitate discussion and engagement between students in the classroom and students at home. Educators were able to teach from the Clear Touch and share the screen in order for students in the classroom and at home could see/hear the instruction. Teachers could stand up, move around and teach from the front of the classroom instead of just being behind a desk interacting mostly with students online. The programs built in the Clear Touch such as Snowflake-Canvas and Easinote provided tools for the educator to annotate the screen, provide a digital whiteboard, and digital tools for instruction. GoGuardian was a later acquisition that was beta tested at the end of the school year. GoGuardian allows teachers to ensure students are on task on their Chromebook and redirect students to specific websites. Teachers also have the ability to block and direct students to specific websites during any given class session. The Google Suite fostered collaboration and accountability tools for students throughout ERE.

Open educational resources, referenced in Table 1, helped teachers engage students in digital ERE. Observed from online drop-ins, helpdesk conversations, coaching sessions, and Q&A during professional development sessions, these tools helped to engage students with one another, the teacher, and the content.

Recommendations: Open Educational Resources

Providing professional development and support for OER is a key recommendation. Open educational resources have been accessible for years, and only heavily used by education systems with low fiscal resources. However, there are many OER which can provide best for student's needs--if they are in compliance with privacy laws. "Teachers who have utilized such tools have reported a greater satisfaction in supporting their students in a hybrid learning work environment" (personal communication, Researcher 2, May 20, 2021). Filtering many of the OER for educators will be an aid to educators and their students going forward.

Online and Hybrid Student Engagement

Table 1. Open Educational Resources of Engagement

Name of Application	Description of Tool and impact of Engagement
Wheel of Names	A digital name randomizer where you can copy and paste students' names and spin the wheel to randomly call on students. Party music is attached to the spin to engage the audience
Confetti Cannon	A web application, tied to a browser, which allows the user to click it, and the users in the shared videoconference will see confetti fly across the screen. We saw this app used to celebrate students for correct answers, participation, and sometimes just for being
Bitmoji Classroom	A digital alternative to a black board configurator, where a teacher can post a digital character of themselves by using the Bitmoji application and hyperlink resources using a Google Slide, Google Drawing, and/or Google Doc
ClassroomScreen.com	A web based digital screen that provides educators with widgets that are commonly used in the classroom (e.g., digital timer, clock, whiteboard, random name tool, and draw tool)
Screencasting (Google extension, iorad, Screencastify...)	Web extensions that provide educators with the ability to video record their screens, annotate/provide voice over as they record, then be shared via a link

FUTURE RESEARCH DIRECTIONS

Upon reflection from the data, we have nine questions to ask the academe for further research:

1. From pandemic pedagogy, how can school systems be reworked to adapt and consider the complexities of remote and hybrid learning?
2. As some educators were better equipped than others to perform effectively during ERE, what “stickiness factor” (Gladwell, 2002) prepares teachers for 21st-century teaching and learning?
3. How can collaboration within school departments be strengthened (e.g., the educational technology department collaborates with the educational services department) to create a systematic approach of support?
4. How was teachers' mental well-being and overall wellness a factor for adopting new technology tools for support?
5. To what extent can a strong digital citizenship curriculum and implementation plan support educators and students with ERE?
6. To what extent can a shift in pedagogy result from an increase in technical skills from educators in order to provide students with on-demand learning and support?
7. What differentiated approaches for teacher professional development are a direct result of ERE?

8. The pandemic exacerbated the digital divide, with a belief that the divide solely belongs to hardware access. How do we address the widening divide in technological knowledge and skills?
9. How can digital learning stemming from equity, inclusion, and diversity be incorporated into a systematic approach of engagement for all students?

CONCLUSION

This research-based and practitioner-focused chapter provides promising practice techniques and real-world solutions to educators in building and maintaining a positive digital culture. By examining student engagement in the emergency remote education environment, we address crisis leadership through teaming. Teaming helped support digital leadership for online and hybrid student engagement.

Through our duoethnography, we found that technology could help facilitate student engagement in online and hybrid environments through generational engagement practices and facilitating data-based decision-making. We also found that district support was the most helpful resource provided to educators to help pivot to online and hybrid teaching. Effective practices such as collaborative activities, effective planning, and SEL connections were strategies that assisted most with student engagement. Effective engagement practices develop from educators who are also experienced designers. Having someone model practice while others learn is a promising practice to revisit. Davis' TAM Model (1989) helped us understand why District-adopted tools, as well as open educational resources, assisted most in online and hybrid student engagement.

Our recommendations at the end of each section are towards implications for practice and policy. With any crisis, there should be an overcommunication, versus risking a lack of communication. Collaboration rather than working in isolation. Instead of anticipating things going “back to normal,” create a “new normal” of embracing technology to facilitate student engagement to the generational group. We posit that learning organizations should collaborate interdepartmentally, and use technological tools to help gather actionable data. As learning organizations adopt technologies and allow for open educational resources, develop a sustainable digital citizenship plan. We further recommend that school leadership stay cognizant of stakeholder mental and physical health needs. Finally, acknowledge and address inequities as they come.

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KEY TERMS AND DEFINITIONS

Blended Learning: Combining traditional teaching methods with technology to support student learning.

Digital Engagement: Using a variety of media and technologies to increase student participation and learning.

Duoethnography: The relation of autobiographical experiences between two persons which fosters new meaning of context.

Emergency Remote Education (ERE): A temporary shift of instructional delivery to an alternate delivery mode due to crisis circumstances.

Hybrid Instruction: Similar to blended learning, combines in-class instruction with online activities.

Pandemic Pedagogy: Speaks to the approaches employed in instructional environments to foster learning in the context of a serious health crisis.

Teaming: A group of individuals empowered to work collaboratively towards a common goal.