Current Issues in Middle Level Education

Volume 26 | Issue 2 Article 3

April 2022

Fostering and Maintaining Relationships: Teacher Education During COVID-19

Jessica VanValkenburgh
Columbus State University, vanvalkenburgh_jessica@columbusstate.edu

Aaron R. Gierhart
Columbus State University, gierhart_aaron@columbusstate.edu

Fostering and Maintaining Relationships: Teacher Education During COVID-19

Jessica VanValkenburgh
Aaron R. Gierhart
Columbus State University

Abstract

This article expounds on how our pedagogical practices have changed in the wake of the COVID-19 pandemic. Many of these effects others have contended with in the education community. The authors share pedagogical strategies they have found to be effective in terms of building and supporting relationships with teacher candidates. They suggest using digitally-mediated teaching and learning strategies, staying connected with students, and using badge-based assessment and feedback approaches to build and support relationships with students; examples of the instructional design and implementation strategies are described. The authors propose that when looking forward, teachers at any level may benefit from providing students with an environment in which they feel heard and supported.

Keywords: COVID-19, reflection, teacher education, relationships

Looking Back

Pre-pandemic, the idea of creating healthy and successful relationships within the walls of middle schools was becoming more popular, but, as instructors of teacher candidates, we sometimes struggled to step out of our comfort zone and model those same relationships with our own students. Creating positive student-teacher relationships is an integral part of *The Successful Middle School: This We Believe* (Bishop & Harrison, 2021). We believe the best way to teach future educators how to create positive student-teacher relationships is to model them within our own courses. To encourage positive student-teacher relationships, students, of any age, must feel valued, respected, and encouraged (Bishop & Harrison, 2021). Looking back, our course syllabi often included strict attendance policies and draconian assignment deadlines which did not always make students feel welcomed and respected.

Across universities, we have seen steadfast policies that accept no late work and allow only medically excused absences, if any. These policies maintain the idea that the student-teacher relationship in collegiate classrooms is one that consists of an authority figure (i.e., the instructor) and subordinates (i.e., the students) who interact on a daily basis (Bartlett, 2005; Larson et al., 2002). These policies do not align with the equitable nature of middle school philosophy. Middle school educators should support the physical and emotional health and wellness of all students (Bishop & Harrison, 2021).

We expected students to come to class and to have perfect attendance, yet we ourselves would cancel a class due to an illness or events beyond our control. We, in some ways, forced students to turn in rushed, subpar work instead of allowing late, yet higher quality, submissions. In some instances, instructors may have unknowingly created an environment that prevents collaboration and successful relationships. Middle schools and middle school educators should continuously examine policies to ensure the academic and personal needs of all students are met (Bishop & Harrison, 2021). As teacher educators, we were not modeling the very philosophy we expected our candidates to uphold.

Looking back, we often expected the students to adhere to certain standards with little to no rationale. As we emerged from our first full academic year amidst the COVID-19 global pandemic, we have come to narratively understand and reflect on our experiences as teachers and human beings (Bruner, 1986). We perceive our current narratives and project towards future action framed by the lens of the past (Britzman, 2003; Mahiri, 2004). How we form, maintain, and grow our relationships with students and other stakeholders in our classroom communities has changed and will continue to evolve in the coming years as the pandemic moves into endemic status.

In this article, we discuss how our education practices have changed in the wake of the COVID-19 pandemic and the influences of the effects we are still battling within the education community. Additionally, we offer pedagogical strategies we have found useful to create and maintain supportive relationships with our teacher education students during this difficult time, including the following: digitally-mediated teaching and learning strategies, staying connected with students, and badge-based assessment and feedback approaches to build and support relationships with students.

Impacts of the Pandemic on Education

K-12 educational institutions and universities faced overwhelming challenges at the outset of the COVID-19 pandemic. In March 2020 in the United States, every state had closed some or all schools to face-to-face student attendance, leaving approximately 55 million K-12 students participating in virtual learning or stuck in limbo while school districts created a game plan (Butcher, 2020). Many universities were also closing their doors to students and moving instruction online as well, uncertain how case counts would fluctuate and when vaccines and efficacious forms of treatment would be created and federally approved (Maxouris & Yan, 2020; Nadworny, 2020).

When schools and universities shut down, students and teachers were impacted in different ways. Teachers scrambled to move all content online, and students struggled to complete virtual assignments without face-to-face instruction. While some educators were trained in online learning, most were not, and many K-12 teachers and teacher educators lacked the basic training to seamlessly transition to an online learning environment (Conklin & Dikkers, 2021). In the shift to virtual coursework, many postsecondary learners reported having to complete more assignments than usual; they earned lower grades and found their educational experiences to be less authentic (Motz et al., 2021). Our teacher candidates participating in field experiences, practicums, and student teaching experiences were caught in the middle of not only the decisions that impacted them as learners, but also those that impacted them as pre-service educators.

Pre-pandemic support for social and emotional learning (SEL) varied greatly within educational institutions, and with the onset of the COVID-19 pandemic, many schools began analyzing how they were implementing SEL (Zieher et al., 2021). The pandemic forced universities to take a step back and look at their SEL practices as well. Traditionally, postsecondary students receive less support "on recognizing and regulating emotions, and less consideration of ways emotions impact student engagement and performance" (Gonzalez-Ramirez et al., 2021, p. 31) than during their K-12 educational experiences. Moreover, many universities did not account for the students who would have trouble meeting basic needs in addition to accessing connected technologies when institutions shuttered (The Hope Center for College, Community, and Justice, 2021).

In response to the pandemic, many educational institutions moved to virtual instruction rather abruptly, with no notice for faculty or students (Murphy et al., 2020). COVID-19 has disrupted education as we know it and many institutions have been left to make choices that may not align with the beliefs of the majority. There is not and has not been a one size fits all approach or panacea that can be applied across different educational contexts. Adaptations of traditional face-to-face teaching and learning have, at times, been met with resistance from parents, students, and teachers alike (Kennedy, 2020).

Many of us are still witnessing the effects of the pandemic in our classrooms and homes every day. From mental health to finances and physical health to learning, the impacts on everyone greatly vary. For those who have been fortunate enough to keep their jobs, see their loved ones in person, and otherwise suffer minimally from the pandemic, it may be hard to imagine the devastation others have faced.

Students of all ages had to begin managing their learning independently or with minimal guidance. College students surveyed in Spring 2020 noted that accessing Wi-Fi and finding quiet spaces to complete assignments were challenges when courses went online (Gonzalez-Ramirez et al., 2021). Many middle and high school students struggled with the same barriers; they were sent home to conditions that made at-home schooling less than optimal or had less instructional support (Bishop, 2021). Keeping engaged with online schooling is difficult for even the best of students in optimal conditions; however, it can be argued that the educational playing field for many students and educators was downright abysmal.

Beyond academics, some social connections decreased in the move to virtual learning, and many students did not have access to the nutrition and exercise they needed (Gonzalez-Ramirez et al., 2021). According to a national survey conducted by The Hope Center for College, Community, and Justice (2021), 58% of college students were experiencing basic needs insecurity in 2020. Additionally, 35% of college students stated they experienced at least moderate anxiety throughout the pandemic. Some students were forced to take on more responsibilities to support family members; others had to take on more responsibilities to make ends meet. In short, many college students faced multiple challenges throughout their semesters in 2020.

While challenges persist, teacher educators can provide support to students, better allowing them to navigate the additional impacts on teaching and learning (Hodges et al., 2020). Over the past year, we have focused our efforts on creating practices that cultivate positive and meaningful relationships with students to support their needs as we all navigate the pandemic. As we create these meaningful relationships with our teacher candidates, we are modeling

middle school best practices and the essential attributes of engaging and equitable learning (Bishop & Harrison, 2021).

Intentional Pedagogical Design

In the Fall 2020 academic semester, our university announced a flexible approach for student attendance and participation in courses that were traditionally offered in face-to-face formats. Students were able to opt out of in-person attendance of course meetings on campus and participate using video conferencing tools, such as Zoom and Collaborate Ultra. Jessica was scheduled to teach an undergraduate science teaching methods course for Middle Grades Education majors, and Aaron was scheduled to teach the version of this course designed for Elementary Education students.

Given the flexible student attendance options we had to accommodate, our communication efforts had to be, at least in part, mediated by digital technologies. This was not a smooth transition. We were not fully trained to use all the technologies available to us and we often had students physically in our class and participating via video conferencing at the same time. We had to be prepared to change our modality at a moment's notice. However, it was our responsibility to be intentional and critical about the ways we deployed digital tools with our students to foster meaningful relationships and consistent, effective communication in which students were active and perception of the physical distance between the face-to-face learning environments and virtual participants was minimal (Gierhart, in press; Moore-Russo et al., 2015).

Fostering meaningful communication across face-to-face and virtual learning contexts is predicated on designing equitable opportunities (a middle school philosophy characteristic) for students to participate in coursework regardless of their mode of attendance. Jenkins (2009) distinguished between providing access to digital learning and truly fostering equitable opportunities to participate. For students to be truly "connected," we must design learning environments - face-to-face and virtual - that "embody values of equity, social belonging, and participation" (Ito et al., 2020, p. 6) with an emphasis on social learning and building meaningful relationships (Crutcher, 2020). Therefore, intentionally designing flexible, participatory learning tasks and interaction opportunities was paramount.

Digitally-Mediated Teaching and Learning. In the initial stages of the pandemic, and often beyond, educators nationwide turned to digital technologies as a means of communicating with and fostering learning opportunities for students to transcend physical distances. These initial integrations of technologies may or may not have been very refined at the literal 11th hour at which educators were called upon to design virtual instruction and online learning environments; however, with the benefits of time and reflection, it was important to enter the 2020-21 academic year with a more critical eye towards effective digitally-mediated approaches to teaching and learning.

It is ill-fated to view digital technologies and digitally-mediated approaches to teaching and learning deterministically (Chandler, 2012; Hong, 2020); rather, it is an intentional pedagogical design that pushes educators to transform teaching and learning through the use of digital technologies (Blewitt & Hugo, 2016). It is imperative that all middle school educators and teacher educators work to continuously improve their practice and meet the needs of their students (Bishop & Harrison, 2021). Improving our digital pedagogy meant examining our current approaches and evaluating digital technologies in terms of how well they transformed

teaching and learning processes (Puentedura, 2014) to foster active student engagement and participation (OECD, 2020a). Our primary concerns in preparing to teach with and integrate technologies in hybridized contexts were student learning needs as well as course- and program-level goals (Barton, 2012; Chase et al., 2020); however, given the focus in our courses on science teaching methods, it was equally important to support students in evaluating and enacting teaching practices (Grossman et al., 2009) specific to the discipline, or "big 'D' Discourses" (Gee, 2008, p. 2), of the sciences.

For example, we frequently curated case videos of science instruction that depicted real world examples of teaching approaches such as guided inquiry, accommodating learner variability, and project-based learning. Students were able to post their observations of the case videos and share insights across face-to-face and virtual contexts. Analyzing teaching practices during pre-service teacher education coursework can support candidates' development of effective instructional approaches specific to areas of the school curriculum (National Academies of Sciences, Engineering, and Medicine, 2020), or "pedagogical content knowledge" (Shulman, 1986, p. 9).

We acknowledge that it was challenging to utilize these videos in that they were created in pre-pandemic times and did not fully reflect the evolving contexts of science teaching and learning our candidates were going to enter; therefore, we facilitated discussions around these case videos to support students in critiquing observed practices that would need to be modified in contemporary science classrooms (e.g., social distancing, virtual learning tools, etc.).

As another example, it was vital that our students engage in *doing* science as an immediate means of considering the specific approaches and instructional designs they could employ with their own students in the field and beyond (Bybee, 2011, 2014). The middle school approach focuses on active learning, where students learn through experience and collaboration (Edwards et al., 2014). Such approaches to teacher education course design also align well with contemporary shifts towards emphasizing practices and skills to engage in inquiry and construct new meaning around science content (Shemwell et al., 2015; Strong et al., 2020).

We designed course assignments in which our students worked independently or in groups to pose a question that was authentic to them and design and conduct a science experiment in order to answer it or inform future inquiry. The students presented the results of their investigations in class or virtually, using digital artifacts (e.g., photos, video recordings, written reflections) and digitally-mediated representations of data (e.g., graphs, charts, tables, etc.), including new insights around the types of science learning experiences they wanted to design for their future students, particularly opportunities for students to direct their own science inquiry as much as possible. While the virtual presentations were not ideal, the students were still engaged in active learning, it was just outside the confines of the classroom. This was important for us to model for our students as they may be teaching similar lessons in the near future. K-12 science learners are more likely to develop passion for the sciences and consider future STEM programs of study and career paths when they have teachers who exhibit and foster their interests through authentic science learning experiences (Penick & Yager, 1993), including students from diverse backgrounds that are underrepresented in STEM education and professions (Abu-El-Haija & Payton, 2021; Mensah, 2019)

Staying Connected with Students. When courses transitioned to a 100% virtual format, our communication with students was immediately interrupted. We found the process of forming

a relationship with students with whom we did not have a previous relationship to be difficult. Those of us with little to no online teaching experience were left trying to determine how to create positive relationships through a computer. As instructors, it was imperative that we take the time to get to know our students and continually support them throughout, and sometimes after, the course.

A growth mindset is the belief that learning and abilities can be developed. We found that by modeling and encouraging a growth mindset, we were able to support our empathy-centered relationship building rather than penalize students for hardships and challenges brought on by the pandemic. A growth mindset requires educators to become vulnerable, concede some of the traditional classroom control, and take a risk to find another way and sometimes, an even better way, of learning and doing (Dweck, 2015).

The culture of any classroom is shaped by the beliefs and lived experiences of those within it. We must take time to learn the experiences of our students and model the relationship building and student empowerment that is part of middle school philosophy (Bishop & Harrison, 2021). Taking time to get to know the students provided us with a more informed perspective of their individual strengths and needs. An instructor's beliefs influence the tenor of the classroom environment and shape their responses to students (Earl, 2013). Expanding our knowledge of and connection with students allowed us to support each student's growth mindset to support their work inside and outside of the classroom. As an example, knowing that a student did not have a laptop allowed us to create sets of assignments that allowed any student to complete them, with or without technology. Because of this, students did not need to worry that they could not complete an assignment, because there was always an alternative option. We also informed students that we could work with them in the event that unforeseen circumstances occurred. From this, students were able to focus on their coursework, learning, and personal growth, knowing that we would work with them if they needed an extension due to an emergency situation.

We wanted to continue to foster and maintain a community of practice and support within the context of a teacher education course in spite of not always having every member of the class physically present in the same room. Designing and coordinating online spaces for students to asynchronously socialize and network with each other and us, their instructors, through digital tools such as blogging, posting, commenting, and annotating shared digital spaces proved invaluable, particularly during public school-based field experience weeks; students were able to workshop ideas, share joys and challenges, and maintain feelings of belonging and association with the teaching field into which they were being inducted during times of great disruption and uncertainty (Bjorkland, Jr., et al., 2020; Gierhart, in press).

We have found posting videos allows the student to receive information in multiple ways and 'see' the instructor, which can help build relationships in a virtual environment. We have implemented welcome videos into our courses. These videos allow our students to learn more about us and also allow us to review the syllabus. Students who miss the first class meeting or who need clarification can access the video at any time. In addition, we started creating weekly overview recordings that reviewed key points from any readings/discussions, as well as upcoming assignments. Lastly, we began posting video recordings in which we reviewed assignments and common errors on assignments.

All of the aforementioned videos were implemented with overall success. It was time consuming and cumbersome to learn how to create videos and create material through different modalities, especially when working from home. The time we engaged in learning was well-spent as students have sent emails of thanks to us for posting videos and taking time to give information through different modalities; additionally, students have shown their gratitude on course evaluations. Our grading practices can help us build relationships with students, even if we were not physically present in the classroom. There were instances of students assuming expectations on digitally-mediated coursework and virtual participation to be less rigorous; however, these challenges were relatively infrequent and immediately addressed with individual students as needed.

Throughout 2020, we also found creating posts to celebrate individual, group, community, or even university successes fostered a growth mindset in courses and built relationships in the classroom and wider community. When students see the successes of others, they may subsequently internalize the notion that they too can achieve success. It is important that we, as instructors, embrace a growth mindset and model a growth mindset. We found the implementation of mindfulness activities to be a benefit to both the instructor and the students, allowing all members of the course to reflect on past experiences and focus on a more positive mindset. At a time when so many were facing hardships, focusing on mindfulness seemed to help lower anxiety, even if for a short time.

Badge-Based Assessment and Feedback. Badging is an assessment approach in which students earn badges as opposed to points or percentage-based grades across a course experience. Each badge is designed with specific criteria students must meet in order to successfully earn it. If students did not meet all of the criteria to earn a badge on their initial attempt, they were allowed to discuss feedback with the instructor and then submit revisions. Instructors can design scales in which the number of badges a student earns in a course equates to a final grade that is reported with traditional letter grades.

Instructors must determine the essential "knowledge, skills, and attitudes that students should be able to demonstrate" (Hensiek et al., 2016, p. 1848) in designing badges for a course. The badge-based approach can foster flexibility in terms of creative course design and implementation (Fanfarelli & McDaniel, 2017); however, it can also facilitate a more flexible, empathetic student experience in a course.

Badge-based assessment was particularly conducive to our instructor-student relations and communication during academic semesters complicated by the COVID-19 pandemic. Student-instructor interactions become more focused on feedback rather than the instructor just assigning a grade with relative finality (Purmensky et al. 2020). It resonates (Stornaiuolo et al. 2017) in our pedagogical arsenal from our pedagogical "Designing" (New London Group, 1996, p. 74) over the past two years as a means of supporting, rather than penalizing, students during moments of academic challenge. Additionally, this approach implicitly shows students that their growth is more important than traditional grades and academic or personal challenges can be overcome (OECD, 2020b).

We were able to build and maintain relationships with students by providing feedback to students. Specific feedback allowed us to open communication channels to create and keep a learning environment that is welcoming and inclusive. Further, providing specific feedback can help ensure grading policies are unbiased and fairly implemented, which aligns to middle school

philosophy. Detailed, specific feedback allows students to see the gap between their work and the expectations or criteria for success without question. More informal and detailed feedback may also allow students to focus their thinking on a specific error and continue with the assignment/course with less frustration (Earl, 2013). We started posting on student discussion boards as a way of giving informal feedback during online and hybrid courses. Whether formal or informal, feedback is a very important part of learning. While giving detailed feedback is more time consuming than just filling out a rubric or otherwise grading without comments, instructors can work to find ways that allow the process to be less time-consuming (Black et al., 2003).

We have found a few strategies that worked well when leaving detailed feedback. First, starting the feedback with the student's name allows the instructor to connect with the student and the student knows the comment is not a general comment, but one that is specifically crafted for them (Black et al., 2003). Additionally, we always started the feedback with a positive remark. Students would read the positive feedback and receive constructive criticism more easily.

As an example, instead of remarking "You need more details here," an instructor might write, "I can tell you have a passion for science! That section is very detailed. You may want to add more details to the math section to be sure the reader gets a full understanding of that content too." Commenting on your students' strengths will help the student but also allow you to get to know them on a more personal level and build upon those strengths in the course. On a similar note, as you write specific feedback can provide greater clarity on how to subsequently support your students. In the previous example, the student could use that section of the assignment to guide their revisions.

Looking Forward

As we look forward, the anxiety that comes with the COVID-19 omicron variant, future variants, or even future pandemics, has become somewhat familiar and even commonplace. Though we have all made strides to better our teaching, patience, and resilience during the ongoing crisis of the pandemic, the unknown is still just that: *unknown*. Teacher education is typically hands-on and "retention in online classes is lower than in face-to-face courses, even as colleges and universities increase their online course offerings" (Glazier & Harris, 2021, p. 10). Research in different programs of study has shown that nontraditional and underserved populations have had even less success in online classes; however, fostering relationships and rapport can improve students' experiences in online courses and improve retention in those courses (Glazier & Harris, 2021).

While there is no perfect student-teacher relationship, we believe that the COVID-19 pandemic has reminded us that classroom relationships, regardless of the level or ages of participants, matter. While teacher education programs contain adult students, many are not far past adolescence and may benefit from many of the same supports that we encourage in middle school classrooms. Middle school philosophy holds true in middle school and beyond. Students of all ages need to be heard, listened to, and supported so they can make great strides in learning. In spite of the challenges of the present, our students can and should be able to achieve their goals and plan for continued success both now and in a future that is (hopefully) less threatened by the COVID-19 pandemic.

References

Abu-El-Haija, L., & Payton, F. C. (2021). A plan to offer computer science classes in all North Carolina high schools. *Issues in Science and Technology, 37*(2), 16-18.

Bartlett, L. (2005). Dialogue, knowledge, and teacher-student relations: Freirean pedagogy in theory and practice. *Comparative Education Review, 49*, 344-364.

Barton, D. (2012). Participation, deliberation learning and discourses of learning online. *Language and Education, 26*(2), 139-150.

Bishop, P. A. (2021). Middle grades teacher practices during the COVID-19 pandemic. *Research in Middle Level Education Online*, *44*(7), 1-18.

Bishop, P. A., & Harrison, L. M. (2021). *The successful middle school: This we believe.* Association for Middle Level Education.

Bjorkland, Jr., P., Daly, A. J., Ambrose, R., & van Es, E. A. (2020). Connections and capacity: An exploration of preservice teachers' sense of belonging, social networks, and self-efficacy in three teacher education programs. *AERA Open, 6*(1), 1-14.

Black, P., Harrison, C., Lee, C., Marshall, B., & William, D. (2003). *Assessment for learning: Putting it into practice*. McGraw-Hill Education (UK).

Blewett, C., & Hugo, W. (2016). Actant affordances: A brief history of affordance theory and a Latourian extension for education technology research. *Critical Studies in Teaching and Learning, 4*(1), 55-73.

Britzman, D. P. (2003). *Practice makes practice: A critical study of learning to teach*. State University of New York Press.

Bruner, J. (1986). *Actual minds, possible worlds*. Harvard University Press.

Butcher, J. (2020). *Public-private virtual school partnerships and federal flexibility for schools during COVID-19* [Policy brief]. George Mason University. https://mronline.org/wp-content/uploads/2020/04/butcher-virtual-schools-covid-19-mercatus-v1.pdf

Bybee, R. W. (2011). Scientific and engineering practices in K-12 schools: Understanding a framework for K-12 science education. *Science and Children, 49*(4), 10-16.

Bybee, R. W. (2014). NGSS and the Next Generation Science Standards. *Journal of Science Teacher Education, 25*, 211-221.

Chandler, J. A. (2012). "Obligatory technologies": Explaining why people feel compelled to use certain technologies. *Bulletin of Science, Technology & Society, 32*(4), 255-264.

Chase, E., Morabito, N. P., & Schamroth Abrams, S. (2020). *Writing in education: The art of writing for educators*. Brill.

Conklin, S., & Dikkers, A. G. (2021). Instructor social presence and connectedness in a quick shift from face-to-face to online instruction. *Online Learning, 25*(1), 135-150.

Crutcher, P. A. (2020). Toward an empathic model of online education. *Distance Learning, 17*(3), 59-62.

Dweck, C. (2015, September 22). Carol Dweck revisits the 'growth mindset'. *Education Week*. https://www.edweek.org/leadership/opinion-carol-dweck-revisits-the-growth-mindset/2015/09

Earl, L. M. (2013). *Assessment as learning: Using classroom assessment to maximize student learning*. Corwin Press.

Fanfarelli, J. R., & McDaniel, R. (2017). Exploring digital badges in university courses: Relationships between quantity, engagement, and performance. *Online Learning, 21*(2).

Gee, J. P. (2008). *Social linguistics and literacies: Ideology in discourses* (3rd ed.). Routledge.

Gierhart, A. (in press). Equitable participation: Elementary science teacher education during COVID-19. In O. Saracho (Ed.), *Contemporary perspectives on research on Coronavirus Disease 2019 (COVID-19) in early childhood education*. Information Age Publishing.

Glazier, R.A., & Harris, H. S. (2020). How teaching with rapport can improve online student retention and success: Data from two empirical studies. *The Quarterly Review of Distance Education*, 21(4), 1-17.

Gonzalez-Ramirez, J., Mulqueen, K., Zealand, R., Silverstein, S., Reina, C., BuShell, S., & Ladda, S. (2021). Emergency online learning: College students' perceptions during the COVID-19 crisis. *College Student Journal*, *55*(1), 29-46.

Grossman, P., Hammerness, K., & McDonald, M. (2009). Redefining teaching, re-imagining teacher education. *Theory Into Practice, 15*(2), 273-289.

Hensiek, S., DeKorver, B. K., Harwood, C. J., Fish, J., O'Shea, K., & Towns, M. (2016). Improving and assessing student hands-on laboratory skills through digital badging. *Journal of Chemical Education, 93*(11), 1847–1854.

Hodges, T. S., Kerch, C., & Fowler, M. (2020). Teacher education in the time of COVID-19: Creating digital networks as university-school-family partnerships. *Middle Grades Review, 6*(2).

Hong, S. (2020). *Technologies of speculation: The limits of knowledge in a data-driven society*. NYU Press.

The Hope Center for College, Community, and Justice. (2021). #RealCollege2021 Basic Needs Insecurity During the Ongoing Pandemic [Report]. Temple University. https://hope4college.com/rc2021-bni-during-the-ongoing-pandemic/

Ito, M., Arum, R., Conley, D., Guttiérez, K., Kirshner, B., Livingstone, S., Michalchik, V., Penuel, W., Peppler, K., Pinkard, N., Rhodes, J., Tekinbas, K. S., Schor, J., Sefton-Green, J., & Watkins. S. C. (2020). *The connected learning research network: Reflections on a decade of engaged scholarship* [Report]. Connected Learning Alliance. https://clalliance.org/wp-content/uploads/2020/02/CLRN_Report.pdf

Jenkins, H. (2009). *Confronting the challenges of participatory culture: Media education for the 21st century.* The MacArthur Foundation. https://library.oapen.org/bitstream/handle/20.500.12657/26083/1004003.pdf?sequence=1

Kennedy, M. (2020, September). The chaos of coming back. *American School and University*, 22-25.

Larson, R. W., Wilson, S., Brown, B. B., Furstenberg, Jr., F. F., & Verma, S. (2002). Changes in adolescents' interpersonal experiences: Are they being prepared for adult relationships in the twenty-first century? *Journal of Research on Adolescence, 12*(1), 31.

Mahiri, J. (2004). New teachers for new times: The dialogical principle in teaching and learning electronically. In A. F. Ball & S. W. Freedman (Eds.), *Bakhtinian perspectives on language, literacy, and learning* (pp. 213-231). Cambridge University Press.

Maxouris, C., & Yan, H. (2020, September 8). More students are back at school as Covid-19 cases rise among children and at colleges. *CNN*. https://www.cnn.com/2020/09/08/health/us-coronavirus-tuesday/index.html

Mensah, F. M. (2019). Finding voice and passion: Critical race theory methodology in science teacher education. *American Educational Research Journal, 56*(4), 1412-1456.

Moore-Russo, D., Wilsey, J., Grabowski, J., & Bampton, T. M. (2015). Perception of online learning spaces and their incorporation in mathematics teacher education. *Contemporary Issues in Technology and Teacher Education, 15*(3), 283-317.

Motz, B. A., Quick, J. D., Wernert, J. A., & Miles, T. A. (2021). A pandemic of busywork: Increased online coursework following the transition to remote instruction is associated with reduced academic achievement. *Online Learning, 25*(1), 70-85.

Murphy, L., Eduljee, N. B., & Croteau, K. (2020). College student transition to asynchronous virtual classes during the COVID-19 pandemic in Northeastern United States. Pedagogical Research, 5(4).

Nadworny, E. (2020, July 22). Colleges spent months planning for fall, but a COVID-19 sure is changing everything. *NPR*. https://www.npr.org/2020/07/22/893525083/colleges-spent-months-planning-for-fall-but-a-covid-19-surge-is-changing-everyth

National Academies of Sciences, Engineering, and Medicine. (2020). *Changing expectations for the K-12 teacher workforce: Policies, preservice education, professional development, and the workplace*. Washington, DC: The National Academies Press. https://doi.org/10.17226/25603

New London Group. (1996). A pedagogy of multiliteracies: Designing social futures. *Harvard Educational Review, 66*(1), 60-92.

OECD (2020a). *Education responses to covid-19: Embracing digital learning and online collaboration* [Policy brief]. http://www.oecd.org/coronavirus/policy-responses/education-responses-to-covid-19-embracing-digital-learning-and-online-collaboration-d75eb0e8/

OECD (2020b). *The impact of COVID-19 on student equity and inclusion: Supporting vulnerable students during school closures and school re-openings* [Policy brief]. http://www.oecd.org/coronavirus/policy-responses/the-impact-of-covid-19-on-student-equity-and-inclusion-supporting-vulnerable-students-during-school-closures-and-school-re-openings-d593b5c8/#section-d1e3202

Penick, J. E., & Yager, R. E. (1993). Learning from excellence: Some exemplary examples. *Journal of Elementary Science Education, 5*(1), 1-9.

Puentedura, R. (2014). SAMR: A contextualized introduction [Powerpoint slides]. http://hippasus.com/rrpweblog/archives/2014/01/15/SAMRABriefContextualizedIntroduction.pdf

Purmensky, K., Xiong, Y., Nutta, J., Mihai, F., & Mendez, L. (2020). Microcredentialing of English Learner Teaching Skills: An exploratory study of digital badges as an assessment tool. *Contemporary Issues in Technology and Teacher Education (CITE Journal), 20*(1).

Shemwell, J. T., Avargil, S., & Capps, D. K. (2015). Grappling with long-term learning in science: A qualitative study of teachers' views of developmentally oriented instruction. *Journal of Research in Science Teaching, 52*(8), 1163-1187.

Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Journal of Education- Boston University School of Education, 193*(3), 1-12.

Stornaiuolo, A., Smith, A., & Phillips, N. C. (2017). Developing a transliteracies framework for a connected world. *Journal of Literacy Research, 49*(1), 68-91.

Strong, K. M., Lawanto, O., & Wilson-Lopez, A. (2020). Peer-prompted engineering design: How do adolescents interact and strategize? *Journal of Technology Education, 31*(2), 19-39.

Zieher, A. K., Cipriano, C., Meyer, J. L., & Strambler, M. J. (2021). Educators' implementation and use of social and emotional learning early in the COVID-19 pandemic. *School Psychology, 36*(5), 388–397.