# Leveraging Community Partnerships to Engage Digitally Foreign Learners in Response to COVID-19

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**Abstract**

This practitioner perspective discusses how creating and leveraging community partnerships in response to COVID-19 enhanced remote learning with science curriculum in an urban middle school with digitally foreign learners. The term digitally foreign learners was coined by the authors to contextualize the experiences of students with limited digital learning both at home and in school as a result of the digital divide. By developing a partnership with the nonprofit organization, I AM not the MEdia, Inc., along with parents and an external educator, the authors describe how a classroom blog site was created that enhanced remote learning engagement with students and families in a high poverty community. Strategies for addressing technology inequities and engaging digitally foreign learners through digital curriculum is provided.

## Introduction

The COVID-19 national pandemic has altered the physical and mental realities of how we live, work, and educate children in society. In March 2020, schools across the US experienced forced shutdowns through state-mandated legislation. As a result, educational institutions began to desperately seek technology alternatives for students so as to engage them in remote learning. Challenges with technology accessibility that disadvantageously impact under-resourced urban and rural communities reached national attention and were deemed an urgent issue (Van Lancker & Parolin, 2020).

As a fifth-year science teacher of middle schoolers and a Ph.D. student in urban education, I understand that technology offers several affordances such as representation, collaboration, and information when employed in a science middle grades classroom (Hsu et al., 2020). But as a result of COVID-19, I immediately began to struggle with implementing technology through remote learning for my science curriculum within an urban middle school context. It was clear that developing a school-community partnership was the pathway for successful remote learning and digital engagement. According to *This We Believe in Action* (Association for Middle Level Education [AMLE], 2012), incorporating school-community partnerships assist in creating a thriving learning environment for adolescents. This article is written with a community partner I Am not the MEdia, Inc., a nonprofit organization that teaches adolescent media literary and media creation, to describe how community partnerships can enhance remote learning engagement with *digitally foreign learner*s.

So that brings us to the question – what is a *digitally foreign learner*? First, it is important to understand that for several decades, researchers and practitioners have grappled with the linkage between socioeconomic status (SES) and the disproportionality of technology accessibility and proficiency in education among urban and rural communities (Dolan, 2016). Although I am an educator at an under-resourced urban middle school, all of my students are regarded as digital natives given their generational place in the technological world, whether they readily access digital technology in their homes or not. However, the lack of academic engagement with technology integration in many urban homes in underserved communities, like these, has proven that this label is often based on assumption rather than accuracy – my adolescent students are not as savvy as the public generally believes. Given this lack of access and ability, we have coined the term digitally foreign learners to describe this particular group of urban middle schoolers.

Throughout this paper we will discuss why and how community partnerships were created to enhance remote learning. In doing so, this paper

identifies four key challenges with serving digitally foreign learners in response to COVID-19 and provides recommendations in each section. The four key challenges discussed include (a) internet and device inaccessibility, (b) acknowledging teacher technology deficiencies, (c) creating a digitally engaging blog for middle schoolers, and (d) family engagement.

### Challenge 1: Internet and Device Inaccessibility

The term digital divide has been utilized in education to unveil the hard truths with inequity among students and technology proficiency. When analyzing inequity in middle grades, only 25% of eighth-grade students nationally who qualify for free or reduced lunch were at or above proficiency in technology literacy in 2018, compared to 59% of students who were not eligible (Nation's Report Card, 2018). Prior to COVID-19, the national strategy to address the digital divide in education seemed to be a band-aid approach through fanciful tech-initiatives and digital devices pushed in classrooms with teachers who were insufficiently trained in technology.

As a result of this approach, educational stakeholders have now had to face the dilemma that equality with device accessibility in schools does not produce equitable outcomes. Technology immersion for learning and education in the home is normative for students from affluent backgrounds. It provides an advantage for remote learning over students who reside in environments with no WiFi or device accessibility outside of school. As an educator in an under-resourced urban middle school, it was necessary to acknowledge these challenges as opportunities to creatively remove technological barriers for my students in response to COVID-19 and the government's mandate to move all learning online.

The challenges of academic inequities that are commonly found in urban schools of underserved communities are prevalent in the middle school where I teach. It is located in an urban emergent city in the southeastern part of the US. According to Milner (2012), urban emergent schools are typically found in large cities with fewer than one million people. Further, urban emergent schools encounter the scarcity of resources that are found in major metropolitan cities but on a smaller scale. It should also be noted that this is a Title 1 school where 99.5% of students qualify for free and reduced-price lunch (National Center for Education Statistics, 2018).

#### Our Response: Partner with Internet and Technology Companies

The remote learning that was implemented due to COVID-19 required a WiFi subscription that many of our students could not afford. Fortunately, through a philanthropic partnership with Spectrum Internet, families that could not afford WiFi were given free access to their network. The company provided hotspot devices for the school to distribute to those students in need. Many of the families were able to take advantage of this opportunity. However, there was a small segment that was not. These were primarily families that also did not have access to transportation to the school to pick up the hotspot devices. Despite our partnership, we also had to contend with a false rumor which stated that families who had a previous outstanding balance with the company were not eligible for the free hotspot program. Teachers reached out to families once again to quash this rumor, and, in doing so, we were able to provide those families with hotspot service.

As a one-to-one school, each student is assigned a technology device to use in the classroom. Although our Chromebooks usually stay at the school, the district permitted us to dispense them to any student who requested one. This change in policy allowed students who did not have technology at home to now have accessibility to all online assignments. Because students were familiar with Chromebooks, the transition to online learning did not require device acclimation. The successful distribution of technology devices to any student who needed one was a relief not only for students and their families but also to teachers. It now allowed us to finally focus on the critical task of implementing the best pedagogical practices for online learning.

Although my school was fortunate enough to have technology devices for all students, along with the philanthropic donation of free WiFi service, this is certainly not a viable option for all schools across the country. In situations where

devices are not available for all students, schools can submit requests to companies such as Walmart that provide grants for equipment in high needs communities. Teachers can also solicit organizations such as Donors Choose to purchase devices or mobile hotspots with internet service for students. Additionally, schools should consider partnering with the IT department of an area university or local community college to assist with providing technology support for students. Finally, many public libraries allow their patrons to check out mobile hotspot devices. Public libraries could be an additional resource that students without home WiFi service can consider for internet accessibility.

### Challenge 2: Acknowledging Teacher Technology Deficiency

The level of experience with technology and time spent in the digital environment among teachers may create barriers or bridges towards engaging students in online learning (Prasad et al., 2015). In addition, the pedagogical approach utilized by educators with online learning may be influenced by their proficiency and understanding of how to infuse technology in curriculum. Current research highlights that teachers who are confident and proficient in instructional technology are more prone to incorporate innovative practices and tools in their teaching that are collaborative, critical, and explorative (Mirra et al., 2018). To ensure that I provided my students with quality online instruction, I had to reflect on my strengths and weaknesses as a middle grades science teacher.

Before the pandemic, I was confident in implementing direct instruction and classroom activities that were engaging, enriching, and culturally relevant. However, transferring in-class strategies to a 100% online platform would be new territory for me, a territory that had to be mapped and traveled in a matter of days. I realized that I would need to develop partnerships with outside stakeholders to assist in responsibly implementing online instruction.

My prior use of technology was limited to assigning students routine tasks, such as creating and viewing PowerPoints. It would have been a complete disservice to my students if this continued to be my sole method of technology implementation during the closing of school buildings. Initially I began to reach out to a senior teacher in the building for advice and suggestions, but in attempting to do so, I quickly realized this problem was ubiquitous throughout the school. For this reason, I decided to initiate a conversation with other stakeholders in middle grades education.

#### Our Response: Partner with Other Educators

Many challenges that are faced in urban school systems with the digital divide and technology inaccessibility among students are comparatively similar in rural school districts. Therefore, I reached out to another middle grades science educator I had met in a recent fellowship program who taught in a rural school district in the mountains of North Carolina. Initially I wanted to learn how they were engaging digitally foreign learners in curriculum during the COVID-19 pandemic. What I discovered from our conversation was that many of their students were also struggling with device and internet accessibility. Some of their students had to use mobile devices and drive to local business parking lots to connect online.
As a result of our conversation, we discussed the idea of collaborating to create a digital science blog for our students to access, engage, and communicate through a Chromebook and mobile device. While both of our school districts utilized Canvas for our Learning Management System (LMS) software, it did not permit collaboration with courses from other districts in the same online learning environment. Therefore, we decided that an online blog site would create an interactive digital learning experience that would enable cross-collaboration between teachers and students in both districts. We immediately began to explore various blog hosting sites such as Blogger and WordPress to assess alignment with our vision for digital learning. Neither of these sites provided a user-friendly platform that we felt would accommodate the needs of our students. Ultimately, we decided on Wix as the hosting software for the blog site. The Wix online software did not require any special coding and provided several interactive widgets to embed in online modules.

Next we had to decide on the type of content to place on the blog site. Considering we were beginners entering online learning territory, we

decided to pilot a unit on earthquakes with the digital blog. For this unit, we co-created lessons to support our students' digital learning experiences through the blog. Each week we planned a new assignment that incorporated digital media and collaboration through online posts. Having a partnership with a co-instructor during this new and unfamiliar time with remote learning offered not only an opportunity for support but also feedback for improvement.

### Challenge 3: Creating a Digitally Engaging Blog for Middle Schoolers

Current research shows that exposure to digital devices with middle grades students in the science classroom does not contribute to critical or academic digital competence without proper instruction (Wang et al., 2014). While many students are digitally engaged through entertainment or social media, they have not been accustomed to engaging with technology in academic and informative ways outside of school. Students in my middle school classroom had never been assigned homework or projects that involved digital technology engagement at home due to accessibility issues prior to COVID-19. These students struggled with understanding how to sign into emails, gain access to editing the science blog, upload content, and navigate website pages. Surprisingly, when I asked students if they had been taught basic technological terminologies such as embedding or keywords, most of my students admitted they had never received education on digital terms and that the words were completely foreign. Additionally, much of what my students knew about navigating online was self-taught through self-exploration. Their minimal proficiency required instruction on digital tools and processes such as embedding images and video files in an online post to communicate scientific solutions. Before engaging students in the lessons with technology use, there was a need to provide instruction on digital terms and tools. While learning technological terms and tools are essential foundational skills for students to participate in online learning, I understand that it requires further instruction to equip students to engage in digital discourse actively and acquire proficiency. According to Couros (2015), technology should only be considered a tool, not a learning outcome. For instance, a book is a tool for learning. While it is essential to teach basic print concepts such as how to hold a book, the direction to turn the pages, or what the term cover means, how to use the book itself is not the learning outcome for literacy. Instead, books are used to explore history, gain understanding and insight on scientific phenomena, or just to connect with the human experience of others through stories. This same concept applies when teaching with technology. Therefore, I wanted to utilize the blog site as an opportunity to engage students with remote digital learning in creative and critical ways outside of assignments that required minimal critical thinking such as read and response activities. It was essential to create a culturally relevant, social, and informative space while increasing students' digital skills through science curriculum.

To implement our vision for the digital blog, my rural co-instructor and I conducted a needs assessment of our own capabilities. As educators who were unfamiliar with online learning and development, we had to acknowledge our inexperienced skill set to create a digitally engaging blog for middle schoolers. We identified the need for an external partner through the needs assessment who could develop the blog and temporarily help with maintenance until we were sufficiently trained. At this stage in our process we had developed a plan for online content and identified our technology needs. It was now time to reach out to an expert to assist us with developing a digitally engaging blog site.

### Our Response: Partner with Digital Media Organizations

Shared learning spaces with parents, educators, and community partners through technology have shown promise in influencing students' social capital and engagement (Gil, 2018). By reaching out to nonprofit and community organizations, middle grades educators may leverage expertise and resources to support them and their students with online learning. After conducting a needs assessment for the digital blog project, I reached out to the local nonprofit organization, I AM not the MEdia, Inc., that teaches adolescents media literacy and media creation. By providing the organization leader with the vision and needs of the project, she was willing to volunteer services and assist with building an interactive blog site for our middle grades students. In addition to creating the blog site, we collaborated on media

workshops for students and creative ways to digitally merge the science curriculum. Through these contributions she became an essential partner in our success.

The first module created by I AM not the MEdia, Inc. was a video tutorial on common digital terminology used with blogging and online content creation. This module also provided an overview of the online tools and processes for logging into an email and the blog site account, posting, and uploading content. In developing the blog site, discussion boards were created in each module and emoji keyboard responses for students were enabled. An emoji keyboard was a successful addition to the site as students reported that they enjoyed utilizing this feature to provide emotional reactions to their peers' posts. Additionally, I AM not the MEdia, Inc. contributed pre-recorded videos and prompts to teach students digital citizenship for communicating and collaborating online in discussion boards. A video tutorial on media literacy was also provided by I AM not the MEdia, Inc. to highlight the importance of sharing content from trusted sources on the class blog. The remaining modules on the blog site consisted of instructional-based activities for our earthquake unit. Our digital blog was made possible by forming a collaboration with a community partner and leveraging her expertise with digital media and mobile integration.

### Challenge 4: Family Engagement

Many educators, including myself, believed that providing WiFi and devices in response to COVID-19 would be a quick fix to engage students expeditiously in remote learning. However, I immediately realized it was a shallow approach to combat a much deeper issue caused by the digital divide. Although students were notified of the expectation for logging onto our school's LMS, which up until this point had been highly underutilized by students and staff, online activity was still minimal. Failure to recognize in the beginning that students were unaccustomed to engaging in structured learning at home with technology limited my understanding of their lack of initial engagement. For many students, their inactivity online was based on motivation and ability. Remote learning was an unfamiliar concept that my students who were digitally foreign learners were not equipped to tackle immediately. Further, I failed to anticipate the need for differentiated instruction for some of my students with special needs in the digital environment. There was a need to modify assignments for English language learners (ELL) and struggling readers. Not having the luxury to provide face-to-face direct instruction to address a student's special needs presented equity challenges for remote teaching. It was clear that the remote learning experience would need to involve a collaborative effort with the parents, guardians or caregivers of my students to serve as co-educators during this time.

Phone communication with many of our economically disadvantaged families was difficult due to disconnected or changed telephone numbers. Because access to WiFi had been a barrier, email was not a viable option for engaging with families who were not accustomed to that method of communication. It was also important to understand that some students may not have access to a parent or guardian to assist with homework or serve as a co-educator due to a conflicting work schedule or being deemed an essential employee. In special cases where a parent or guardian may be unavailable to assist with remote learning, teachers should consider extending private live virtual sessions to support and engage students on a case-by-case basis. Establishing a partnership with a local college's education department to recruit pre-service teachers to serve as volunteer virtual learning partners with students will also provide additional support. To ensure students are actively engaged online with remote learning, it is essential for teachers to develop a strategy for reaching and involving families or establishing additional support systems.

#### Our Response: Partner with Families as Co-Educators

First, I had to develop a strategy for opening the lines of communication with parents and guardians. I immediately began making phone calls to reach parents and guardians for both a wellness check with students and to verify which numbers were active. Once I identified inactive phone numbers, I researched those students' home addresses. For students who lived in neighborhoods close to the school, which were the majority of my students, I printed out a letter with my phone number for parents and guardians and asked that they call me at their

convenience. This letter was taped to their house door to maintain the social distancing mandate. Within the first two weeks, I gained communication with most families. By opening the lines of communication with parents, I had begun the first step for developing a collaborative remote learning environment.

While initiating communication was essential, maintaining communication with families was key to engaging them as co-educators. Developing a communication log that outlined each student, parent's name, mode of contact, time of day, and confirmation of weekly messages was extremely beneficial. When communicating with families, I sent text messages twice a week, and for parents and guardians who did not acknowledge received messages, I reached out over the phone to check in. By establishing a shared learning space with families to discuss our challenges and successes with co-educating together, student engagement online increased tremendously, with the majority of my students receiving active status.

Next I began to construct activities in my lesson that would engage families in the learning process. The AMLE (2012) provided a foundational model for engaging parents and guardians through its Teachers Involve Parents in Schoolwork (TIPS) framework. For instance, in a lesson on earthquakes, I tasked students and their family to create a Jell-O earthquake via an in-home kitchen lab and video recording of their experiment. Students and their parents or guardians were charged with building an earthquake-resistant structure with gelatin mix, a small aluminum pan, thirty miniature marshmallows, and toothpicks. When providing the assignment to families, I asked whether they might need support with getting supplies for their students to complete the activity. For parents and guardians who were unable to buy supplies for students, I received permission from my principal to purchase materials and drop them off to families at their homes. Teachers that may have a similar situation but are unable to distribute materials to students' homes may leave them at the school front office and organize pick-up time intervals that encourage social distancing for families. Considering that some families may initially feel uncomfortable admitting they need resources, it is also beneficial to purchase extra supplies and follow up with families again prior to the assignment to present an offer for "extra" or "leftover" materials for students' use.

Once materials were purchased and delivered, parents or guardians were instructed to help students make and solidify the gelatin for the assignment. Additionally, families were encouraged to work with students to create three iterations of structures using toothpicks and marshmallows to simulate buildings. While students conducted the earthquake simulation by shaking the pan of Jell-O, a family member was required to record a video to capture which structure would withstand the earthquake. Students and family members were able to utilize their Chromebooks provided by the school or their own mobile device to record video content. This assignment is an example of how incorporating family involvement in a lesson designed for remote learning equips parents and guardians to serve as co-educators.

Similarly to the Jell-O project, teachers may consider assigning traditional group or partnering activities that would be utilized in the classroom as a model for developing lessons that encourage family engagement. Teachers must designate clear roles and responsibilities for family members and students when outlining each collaborative activity. For example, when assigning the Jell-O earthquake kitchen lab activity, parents or guardians were responsible for recording video footage, serving as an assistant to the student with making Jell-O, and helping to create building structures. In addition, the role of the student was clearly stated in the activity as the project lead for constructing the building structures with toothpicks and facilitating the earthquake simulations. By encouraging family engagement, I learned that just as teachers inspire students academically, parents and guardians empower children through meaningful, connected learning experiences.

Despite the successes experienced by developing the collaborative Jell-O earthquake activity with families, there were several challenges I had to address among students with special needs. It was important for me to differentiate the Jell-O earthquake kitchen lab activity and other assignments for struggling readers and ELL students. Video tutorials with directions for completing the Jell-O earthquake kitchen lab activity were provided so that students and

parents could use them alongside printed directions. These handouts and accompanying videos were also available in Spanish with the foreign language teacher's assistance at my school. When co-educating with parents or guardians who are not proficient in English, teachers may utilize translation tools such as Google Translate or Bing Translator for written directions and instructional materials. Foreign language teachers in the school and bilingual students in your class may be a tremendous asset in assisting with language barriers during remote learning. Educators from other subject areas could easily find themselves in similar examples and engage parents in the differentiation process. Regardless, no one knows each student's individual needs better than their parents. Encouraging parents and guardians to step in as experts to assist in differentiating instruction for their child's learning needs provides a home model that could have benefits long after the current academic year ends.

## Recommendations for Middle Grades Educators

### Create a Social Space for Learning

According to seminal literature written by Piaget (1954), social interaction during adolescence is essential for neurological and cognitive development. When developing the blog site, we established the firm goal of furnishing our adolescent students with the social interactions they needed during the isolation of COVID-19. This period of prolonged isolation had the potential to disrupt the learning process significantly. Lessons were designed to mitigate this learning disruption while addressing many of the characteristics of a successful middle school, such as active learning, multiple learning approaches, varied assessments, and family involvement (AMLE, 2012).

At the end of each weekly class assignment, students were instructed to post on the community blog. Some sample discussion prompts from our earthquake unit included: "How might your home be able to withstand an earthquake?" and "Share a photo and comment of one item in your home you would be afraid to lose in an earthquake." All students were expected to comment on blogs of their classmates and a post from someone at our partnering school. Prior to social collaboration online, students were required to review the digital citizenship video module created by I AM not the MEdia, Inc. and provide a reflective post on their commitment to positive interactions.

This digital citizenship activity became a teachable moment that helped reinforce an understanding of the need to create an inclusive and safe online learning environment. Further, by reinforcing an expectation of a safe online learning space, we did not have to contend with negative social interactions. The need to transfer positive community building strategies that are established in the classroom into an online learning format is something that should be done across all levels and subject areas of middle grades education.

### Incorporate Apps Used by Adolescents

Although the district assigned teachers standards to cover during school closure, I needed to provide inviting lessons that kept adolescent students motivated to learn. Ruiz (2012) discussed the importance of implementing pedagogical strategies that motivate students and set high expectations. Thus I applied the use of social media through TikTok videos with students. TikTok is an online app that allows users to create short-form videos that can be personalized through editing. Each student was responsible for submitting a TikTok video to creatively show their reaction by themselves or with family if they were to experience an earthquake. My primary purpose for incorporating TikTok videos was to allow students to incorporate technology in an enjoyable way while building community with their peers. As students created their TikTok videos, they shared a part of who they were, where they were from, and what they valued. One student's submission was especially memorable. In it, a loud warning alarm wakes up a sleeping student. As he awakens and realizes an earthquake is happening, the song "Break My Stride" by Mathew Wilder begins to play. He then rushes through his home and wakes up his family members to seek safety. This activity shows how the student in the video placed extreme value in his family versus material objects. By introducing activities that incorporate popular apps into the digital learning environment, educators will create spaces that allow students to display their

creativity, and show their values. Additional apps that teachers may consider incorporating during remote learning include Youtube Kids and Mixer for video projects, or Pinterest to create a collaborative classroom photo journal. Each of these platforms allow adolescents to engage in socially embedded learning and creatively personalize assigned deliverables.

**Be Adaptable with Technology**

A significant recommendation I would provide for educators responding to COVID-19 with digitally foreign learners is to continue to be adaptable when experiencing challenges that arise with technology. Understand that both you and your students are exploring new territory in digital learning while isolated in your individual homes. Technology may fail some days, and a lesson prepared in the digital space may not go as planned. For instance, a lesson developed with my rural co-instructor had initially consisted of an online National Geographic activity that included an earthquake video simulation. We thought this lesson was perfectly constructed as it was designed to capture students' interest by observing the devastating effects of an earthquake. After introducing the lesson to students and parents, I began receiving multiple phone calls from my parent co-educators that the activity involved flash capability, which was not enabled on the students' Chromebooks. It was clear that we would have to adapt the lesson due to the challenges we did not consider initially with technology. Therefore, we incorporated YouTube videos to achieve the same goal of demonstrating the effects of an earthquake and tasked students to find and share their earthquake videos.

Considering the challenges experienced with the National Geographic earthquake simulation activity, I was surprised at the high level of continuous student commitment.

Students showed their commitment by maintaining an active online presence despite initial technical difficulties with accessibility issues and proficiency. Through this experience, I learned how important it is to remain optimistic when experiencing challenges with technology during instruction. Teachers should not alleviate technology when experiencing challenges, but instead should model a positive outlook towards exploring alternative usage. By being optimistic and adaptable with technology issues that arose, my students were able to observe how to navigate technical challenges and complete their assignments. Lessons learned from this experience with technical challenges can be applied to educators in all subject areas and grade levels when incorporating technology in curriculum.

## Conclusion

During these unprecedented times we have come to realize how community partnerships can be a powerful asset for assisting teachers in facilitating online instruction. Teachers should sustain these partnerships and allow them to serve as supplemental resources in the event of future unforeseen crises. Practitioners, as well as other middle grades stakeholders, must begin to assess what a new sense of normalcy looks like for the adolescent learner. We must continue to reinforce the best practices for educating digitally foreign learners as a unique group, based on years of intensive research addressing digital inequity. However, there must also be a willingness to be open to new strategies that will be necessary due to these unprecedented circumstances. These strategies will require a pragmatic approach that is inclusive of all the diverse needs of middle grades learners. Such strategies will involve addressing the digital divide that exists amongst marginalized communities and creating online safe spaces; nothing should be left off the table. If this COVID-19 pandemic has done nothing else, it has reminded us of how adaptable middle grades learners can be. That being said, it is not a matter of if another global crisis will happen; rather, it is this: When will it happen? How prepared we are for our students when that next time comes will be determined by what we have learned from this current pandemic.

## References


Association for Middle Level Education (AMLE). (2012). *This we believe in action: Implementing successful middle level schools*.

Couros, G. (2015). *The innovator's mindset*. Dave Burgess Consulting.

Dolan, J. E. (2016). Splicing the divide: A review of research on the evolving digital divide among K–12 students. *Journal of Research on Technology in Education*, *48*(1), 16–37. https://doi.org/10.1080/15391523.2015.1103147

Gil, E. (2018). Leveraging technology toward family supports for and development of middle schoolers. *Middle Grades Review*, *4*(1), 9. https://scholarworks.uvm.edu/mgreview/vol4/iss1/9/

Hsu, P.-S., Mukhopadhyay, S., & Al-Ararah, R. (2020). Exploring current practice of using technology to support collaborative argumentation in science classrooms. *Middle Grades Review*, *6*(1). https://scholarworks.uvm.edu/mgreview/vol6/iss1/6

Milner, R. (2012). But what is urban education? *Urban Education*, 46, 556–561. https://doi.org/10.1177/0042085912447516

Mirra, N., Morrell, E., & Filipiak, D. (2018). From Digital consumption to digital invention: Toward a new critical theory and practice of multiliteracies. *Theory Into Practice*, *57*(1), 12–19. https://doi.org/10.1080/00405841.2017.1390336

Nation's Report Card. (2018). National Achievement Level Results in Technology & Engineering Literacy. https://www.nationsreportcard.gov/tel/results/achievement/

Piaget, J. (1954). *The construction of reality in the child*. Basic Books.

Prasad, C. V., Lalitha, P., & Srikar, P. V. N. (2015). Barriers to the use of information and communication technology (ICT) in secondary schools: Teacher's perspective. *Journal of Management Research*, *7*(2), 190.

Ruiz, E. C. (2012). Research summary: Setting higher expectations: Motivating middle graders to succeed. *Association for Middle Level Education*. http://www.amle.org/BrowsebyTopic/WhatsNew/WNDet/TabId/270/ArtMID/888/Article ID/307/Setting-Higher

U.S. Department of Education, National Center for Education Statistics (2018-2019). *School details for Druid Hills Academy* https://nces.ed.gov/ccd/schoolsearch/school_detail.asp?Search=1&Zip=28286&Miles=5&ID=370297001213

Van Lancker, W., & Parolin, Z. (2020). COVID-19, school closures, and child poverty: A social crisis in the making. *The Lancet Public Health*. https://doi.org/10.1016/S2468-2667(20)30084-0

Wang, S.-K., Hsu, H.-Y., Campbell, T., Coster, D. C., & Longhurst, M. (2014). An investigation of middle school science teachers and students use of technology inside and outside of classrooms: Considering whether digital natives are more technology savvy than their teachers. *Educational Technology Research and Development*, 62(6), 637–662. https://doi.org/10.1007/s11423-014-9355-4