Acta Educationis Generalis
Volume 16, 2026, Issue 1

DOI: 10.2478/atd-2026-0001

Remote Learning Challenges in Rural Schools

Hannah Marie Miller Niane – Nichole Rivale-Bell*

Received: May 21, 2025; received in revised form: December 5, 2025;
accepted: December 8, 2025

Abstract:
Introduction: Transitioning from in-person to remote learning resulted in students losing access to educational resources in rural California schools. The study revealed complex social concerns of equity and technology access between 2020 and 2022. The conceptual underpinnings included social constructivist learning and intersectionality theory. A narrative inquiry study explored inequitable access to technology through the stories of one minority student and four K-12 administrators. Using In Vivo, Value, and Axial coding revealed two themes through thematic and discourse analysis: harvesting education equity and integrating artificial intelligence in schools. Gender and socioeconomic stratification may hinder access to educational resources (Mathrani et al., 2021).
Methods: This qualitative narrative inquiry study explored the barriers to remote learning in rural California, using interviews, archival records, and a focus group.
Results: Educational inequity is often intersectional. The ethical use and student privacy associated with artificial intelligence (AI) preclude uniform adoption of AI use in K-12 classrooms.
Discussion: The increased use of technology in rural learning environments may foster a digital-rich climate; however, marginalized communities may face inequalities in Internet access (Oster et al., 2021).
Limitations: Increased growth in rural schools resulted in a reduction from eight to three rural high schools, changing the sample population.
Conclusions: Rural school administrators need coaching, mentorship, and access to gain proficiency in technology.

Key words: broadband access, equity, digital technology, intelligent agent, remote learning, WiFi desert.

* Hannah Marie Miller Niane, University of Phoenix, Phoenix, USA; hniane58@email.phoenix.edu; ORCID: 0000-0001-7352-4524
Nichole Rivale-Bell, Walden University, Minneapolis, USA; nichole.bell@waldenu.edu; ORCID: 0009-0009-4846-4182

Introduction

The societal implications of intersectional, gender, and socioeconomic stratification may broaden the digital divide in rural schools in developed and developing countries. For 24 months, from March 2020 to April 2022, when schools across the globe transitioned from a traditional to remote learning environment, access to broadband and high-speed internet connectivity was critical (Gillis & Krull, 2020; Mathrani et al., 2021). For many rural dwellers and low-income households, the economics of acquiring digital equipment and accessing the internet were impractical. Socioeconomic and societal barriers hinder the availability of educational resources, challenging the delivery of an equitable education to all students (Mathrani et al., 2021).

The scope of this study aimed to reveal how the lack of technology and digital devices limits equitable access to asynchronous and synchronous learning for rural and low-income students in rural California schools (Puente, 2022) and war-torn countries (Svobodová et al., 2024). Research data collected between March 2020 and April 2022 depicts similar patterns of digital divides in developing and developed nations (Mathrani et al., 2021). For example, transitioning from traditional to digital instruction revealed inequitable access to high-speed internet and broadband accessibility, resulting in limited instructional resources, based on socioeconomics, gender, race, and societal status (Mathrani et al., 2021; Millora, 2025).

The demand for digital access revealed a socioeconomic disparity among student groups regarding the accessibility and availability of digital technology. Between March 2020 and April 2022, rural California students transitioned from in-person instruction to a combination of asynchronous and synchronous instruction, utilizing remote learning. Six percent of all California's 6.2 million K-12 students enrolled in a rural school between 2019 and 2022 (Carpenter & Dunn, 2020). While many students experienced challenges using remote learning, Bansak and Starr (2021) argued that using digital technology in low-income rural households lacking internet and broadband was impractical. Strategic planners should have considered the needs of poor, rural communities in implementing remote learning in geographical areas situated in Wi-Fi deserts and regions with weak internet connectivity (Anakwe et al., 2021).

The strategic remote learning planning could have better assessed the digital needs of low-income and distant rural communities. The instructional demands for digital access have accentuated the socioeconomic disparity in rural students' access to digital technology. Technological and social concerns factored into the political economy of educational technology. Wargo and Simmons (2021) reported that digital inequalities and learning environments were linked to instructional barriers in rural schools. Technological change impacts rural

schools as social institutions, affecting them economically, politically, and culturally (Wargo & Simmons, 2021).

Leadership efforts play a significant role in the educational improvements of a school system. In some cases, district technology policies and procedures designed to control biases and prejudices were perceived as demeaning by some student populations (McMahon & Hollingshead, 2021). Many households in rural minority California did not have high-speed internet and broadband (Puente, 2022). Administrators' attitudes toward investing in technology enhancements in rural schools vary. Some educational leaders find implementing technology changes challenging. The effectiveness and efficiency of technology use are driven mainly by the user. Therefore, the end-user's ethical behavior concerning technology use is essential.

The successful implementation and sustainability of a technology infrastructure depend on the mindset and vision of educational leadership. Drafting a mission statement describing the goal for achieving technological innovation and sustainability is a strategy for adopting a technology infrastructure. The successful integration of technology and its assured sustainability is a collaborative process requiring commitment from all stakeholders. Gonzales (2019) and Parks et al. (2021) posited that technology leadership is a hallmark of a school's leadership quality. Successful initiatives involving technology reform depend on effectively integrating physical, cultural, instructional, and technology leadership into a school's continuous improvement system (Lamb & Weiner, 2021).

Technological learning is a dynamic process where technology continually shapes societal expectations (Faik et al., 2020). System improvements and technology changes are designed to ensure students receive current and relevant instructional outcomes. With the integration of artificial intelligence in education, educational leaders must continuously evaluate and integrate different components of educational technologies, such as virtual reality and blockchain, to meet their educational value. Technology and reliable internet are learning tools that may be considered equivalent to textbooks, with both learning tools being essential to student achievement (Razo & Blankenship-Knox, 2022). Svobodová et al. (2024) highlighted many benefits associated with using a virtual co-teaching approach. Students can benefit from the prerecorded lessons during asynchronous teaching sessions and can be replayed to review the material. Virtual co-teaching enables the classroom teacher to simultaneously facilitate multiple students in different locations, keeping them engaged and providing immediate feedback. This approach is a practical and cost-effective solution. Additionally, the content materials can be continually improved for future integration with new-generation information and communication technology.

Economic disparities may influence students' access to technological resources and learning opportunities. Instructional demands for digital access have exposed the socioeconomic disparities among student groups in terms of accessibility and availability of digital technology. Economic limitations may have increased the probability that minority students would experience inequitable access to educational technology (Tate & Warschauer, 2022). A student barrier may include a lack of computer literacy, poor teacher feedback, and student isolation. Such inequality may also impede continuous school improvement efforts.

In conclusion, when integrating technology in schools, educational leaders should strive to continuously evaluate the efficient use and effectiveness of the overall performance of the technology and integrate other technologies, such as virtual reality and blockchain, for their educational value. Survey the equitable access and distribution of technology to avoid creating learning barriers (Tate & Warschauer, 2022). Limited access to technology in the learning environment may create learning barriers, such as a lack of computer literacy, poor teacher feedback, and student isolation.

1 Literature review

Many rural minority households in California lacked high-speed internet and broadband (Puente, 2022). Reise (2019) argued that qualitative access enables other people to understand perceptions and realities sustained through social processes. Social conditions influence preconceived notions and mindsets, and the social, cultural, and institutional narratives could transform individual experiences (Katz, 2020; Oster et al., 2021). Understanding the stories told and perceived barriers minority students experienced using remote learning may generate change agents for technological innovations and encourage school-wide investment in digital technology adoption. The literature search yielded limited qualitative research about minority students using remote learning and designing virtual learning environments supporting knowledge social construction during COVID-19 for minority students (Peterson et al., 2020). The literature review substantiates a need for future research in rural access to digital technologies and efforts to close the digital gap to ensure minority students in rural communities have access to equitable educational resources (Puente, 2022).

The purpose of this qualitative inquiry was to understand narratives about minority students and policymakers' views on how limited high-speed internet in rural California homes restricts educational opportunities and access to resources in high schools. The literature review encompassed the examination of digital archival databases, as well as empirical and government-sponsored studies (Bell et al., 2020). Categorizing and color-coding the data by spatiality, sociality, and temporality helped to keep articles organized (Bell et al., 2020). The literature review highlights the need for future research on rural access to digital

technologies to close the digital gap and ensure equitable educational resources for minority students in rural communities (Puente, 2022).

The research questions and words germane to educational technology provided the cognates, keywords, and strings like African American/Black students, Hispanic students, Latinx students, COVID-19 pandemic, remote learning, narrative inquiry, digital divide, rural schools, California rural school districts, and barriers to learning resources. Maintaining a list of search words and BOOLEAN phrases helped to reduce redundancy. Categorizing and color-coding the data by spatiality, sociality, and temporality helped to keep articles organized (Bell et al., 2020).

2 Methodology

This qualitative narrative inquiry study shared the perceptions and stories of instruction barriers encountered using remote learning from the perspectives of minority student graduates and rural California administrators. The study aimed to better understand how minority students and school administrators perceived using remote learning in rural California. Participants' expressions, opinions, perceptions, and feelings were used to explore the social problem of equitable access to technology in rural California students. The research design approach provides a deeper understanding of the truth or reality relative to the significance of the experience to an individual, aligning with thick, rich stories of students and administrators who experienced inequitable access to technology and educational equity constructs.

2.1 Research population

The research population involved two subgroups: four school administrators and one former student. All participants were volunteers and selected through self-identification of attending or working in a rural California high school district between March 2020 and April 2022. The National Center for Education Statistics (NCES, 2021) classified and assigned a two-digit locale code to the three types of rural schools: 41 (fringe), 42 (distant rural), and 43 (remote rural).

The California educational system consisted of 37 district offices and 80 public high schools designated as local codes 42 and 43.

The sampling methods used for this study were purposive and snowball sampling. Snowball sampling effectively established a working relationship with the hard-to-reach school administrators and student population. The average student population in rural schools ranged from 290 to 1 700 students, grades K-12, and approximately 78 percent were eligible to participate in the federally funded free or reduced lunch program. The average student population in this study ranged from 500 to 2 000 students (see Table 1).

Table 1

District demographics in 2000 (rounded figures)

District Identifiers	*Student Totals*	*SED*	*African American*	*Hispanic*	*Biracial*
D-1	500	450	<5	490	<5
D-2	660	620	10	270	30
D-3	2 400	2 150	40	1 900	<5
D-4	2 000	1 100	10	790	130

Note: SED is the acronym for socio-economically disadvantaged

2.2 Informed consent

All participants signed Informed Consent forms before participating in this qualitative research study. In advance of the study, all participants received detailed briefings about the research study, including plans for future publication. Participant data have been anonymized to protect the identities of persons and/or establishments. These alterations have not distorted the scholarly meaning.

2.3 Data collection

Data were collected through interviews, review of archival records, and participation in a focus group. The research instruments used in this narrative inquiry design benefited the examination of the different outcomes yielded from three social constructs: temporal, social, and spatial, based on precepts revealed through ethical collaboration (Clandinin, 2006). Chunking and clustering the data were used to deconstruct codes, identify patterns and themes, and interpret meaning. This research design facilitated the creation of an ethical and factual narrative by extracting meaning from shared stories of personal encounters with a specific phenomenon (Connelly & Clandinin, 1999). Using In Vivo, Value, and Axial coding revealed two themes through thematic and discourse analysis: harvesting education equity and integrating artificial intelligence in schools.

3 Results

Socioeconomic inequality compromised educational funding and access to educational technology and instructional resources. The study exemplified the pervasiveness of equitable access to education and resources. Schooling and classifying communities as marginalized minority students were evaluated relative to White middle-class culture (Ruggiano, 2022). Concerns about the equitable treatment of minority students are not new (Bester & Bradley-Guidry, 2022). Physical, human, and social constructs provided the framework for conceptualizing equity concerns manifested during the pandemic-induced shift to emergency remote learning (Tate & Warschauer, 2022).

Robie (2023) argued that using digital literacy grants access and equity to socioeconomically disadvantaged students, including students with learning challenges and diverse needs. Instructional demands for digital access have exposed the socioeconomic disparities among student groups in terms of accessibility and availability of digital technology. The digital divide widened significantly during the transition from in-person to remote learning (Maree Moore et al., 2021). Educational technology may widen the digital divide between minority students in rural communities and their peers.

3.1 Themes

Two key themes emerged from this study. The two themes were harvesting education equity and integrating artificial intelligence in schools. First, educational inequity is often linked to the concept of intersectionality. The research participants shared stories of educational inequity. The issue is still pervasive among rural, low-income students. African Americans and Hispanic students often had access to older technologies. The available resources may not suit the needs of each student. A student participant stated, "Some students who did not show academic progression even with technology access needed in-person, direct instruction." An administrator claimed, "Transitioning to remote learning highlighted a broader systemic issue that warranted discussion to ensure equitable access to educate all students, such as language barriers."

Maree Moore et al. (2021) argued that digital instruction does not ensure equity in educational technology. Equity for all students begins during the design phase of curriculum and instruction. Inclusiveness and learning equity were overlooked during the instructional design (Knutzen, 2019). Many students used cell phones or public Wi-Fi to complete schoolwork (Morgan, 2022). Inequitable access to technological devices and the Internet was common for students in socioeconomically disadvantaged communities. School districts missed planning for inclusivity, resulting in a slow integration of physical, cultural, instructional, and technological aspects into strategic plans for transitioning to remote learning. The slow integration of educational technology may have impacted the perceived barriers expressed by minority students and administrators (Lamb & Weiner, 2021).

Second, integrating artificial intelligence (AI) in schools was the least expected. The evolution of technology demands has led to a greater reliance on intelligent agents in education. An intelligent agent is a technology tool that is beneficial when navigating complex challenges involving the complexities associated with interfacing people with computers and their connection with people. Educational equality exists when all students have access to similar resources. An administrator acknowledged that cybersecurity and data privacy are central to comprehensive policies and regular audits ensuring compliance and safety.

Another administrator stated, "Now they have classes for students and instructors in the education field to learn more about AI in the classroom. I think if it's managed well, and the institution is open to it, I believe AI has some wonders that we would be able to learn from in real time." Increasingly, California school districts are evaluating the utility of artificial intelligence as the technology continues to gain greater acceptance and use in society. However, concerns about the ethical use and student privacy persist, precluding the uniform adoption of AI in K-12 classrooms.

4 Discussion

The outcomes of this narrative inquiry study provided insight into what low-income students and administrators perceived as barriers to digital learning opportunities. Society may benefit from the increased use of technology in different learning environments with its potential long-term effects on a digital-rich climate (Oster et al., 2021). The social learning theory and intersectionality, as they relate to educating minority students in rural California schools, establish the underpinnings of the conceptual framework for this qualitative narrative inquiry study. Social issues of equity and access to technology became apparent when educational leaders began implementing innovative technological instructional practices. Cultural variances were frequently exclusionary in remote learning. Students perceived these exclusionary practices as having to combat racism, linguicism, and sexism (McMahon & Hollingshead, 2021). Therefore, technology barriers may limit a student's access to learning opportunities and resources.

4.1 Social constructivism

Students acquire knowledge through lived experiences. Validating an acquired skill may translate to a habit-forming activity (Clandinin & Rosiek, 2007). Students' participation in learning and policy consideration grew in appreciation as a critical voice to be embraced. It also prepares users mentally to practice curriculum modification and instruction in real-time. Social constructivism may bridge an understanding of social injustices associated with educational technology. Societal inequities may hinder the realization of the democratic ideal, which is rooted in social consciousness derived from the convergence of heterogeneous elements within a population (Creighton & Dewey, 1916).

4.2 Intersectionality

Crenshaw conceptualized intersectionality as a cross-sectional perspective of a theoretical and methodological framework to analyze social constructs related to gender, race, class, and age, which may determine opportunities and oppressions dependent on environmental situations (Haynes et al., 2020). Esposito and

Evans-Winter (2022) argued that the underpinning of exploring the subjectivity of persons situated at the intersection of power and domination is intersectional. Racial inequities, socioeconomic status, and gender have been documented as potentially contributing to barriers and inequitable access to educational technology. Examining the epistemological assumption of intersectionality enhances the understanding of how race and gender overlap to shape what is known and how the knowledge was acquired about a culture and its people (Esposito & Evans-Winters, 2022). The digital divide may expand beyond common intersectional boundaries, as gender social expectations digital gender divide, in India, Pakistan, Bangladesh, Afghanistan, and Nepal (Mathrani et al., 2021). Cultural and social constructs may disincentivize minority students from participating in alternative learning platforms, such as remote learning.

4.3 Technology integration

Technology affordances are standard elements of institutional logic in a conceptualized framework (Faik et al., 2020), significantly influencing the dynamics between technology and societal change. The transition from a traditional classroom instructional and learning environment was challenging for administrators, students, and teachers. The acceptance, perception, and preparedness to use software-embedded technology may influence the utility of educational technology. Frequently, Administrators utilize the Davis Technology Acceptance Model, commonly known as TAM, when introducing technological changes to organizational systems.

TAM is an excellent management tool for problem-solving and technology decision-making (see Figure 1). This management tool is beneficial in forecasting the feasibility of software and technologies, considering external variables that influence the use of educational technology. Exploring a computer application helps better understand its feasibility and usability.

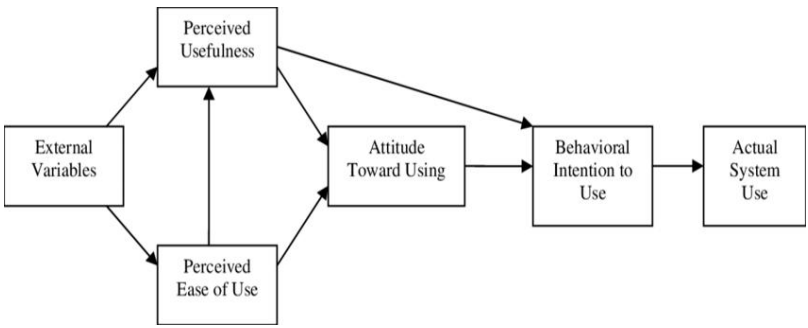

Figure 1. Technology Acceptance Model (Davis, 1986).

Inequality in access to the Internet in marginalized communities impeded their ability to advocate for social justice issues they were experiencing. Concerns about the equitable treatment of minority students are not new (Bester & Bradley-Guidry, 2022). Barriers to accessing equitable resources in rural schools continued for minority students (Puente, 2022; Ruggiano, 2022). The focus on surviving economic deficiencies often overshadowed the need to connect to the Internet or to purchase technology. Many initiatives remain focused on education.

Using remote learning has deepened youth's recognition of the interconnections between education and broader developmental objectives (Millora, 2025). Educational equality exists when all students have access to similar resources.

Millora (2025) found that many youth activists reported that closed-off spaces hindered their ability to maintain internal relationships, leading to alienation rather than solidarity. Some educators integrate technology into their daily practice, motivating students and developing proficiency using technology in instruction, as well as meeting the needs of diverse learners (Robie, 2023).

4.3.1 Transformational learning

The selected technology must be relevant and appropriate for the targeted learning objectives. Moser et al. (2021) argued that prior experience with planned online education would not necessarily prepare teachers specifically for the context of online instruction. Technology is continually evolving and transforming the learning process. Emerging trends in educational technology are creating many differentiated learning opportunities. Svobodová et al. (2024) posited that virtual co-teaching might serve as a bridge in meeting some of the challenges of using educational technology in remote areas. Virtual co-teaching is flexible and allows for greater differentiation of learning, where both the teacher and artificial intelligence collaborate to support academic achievement. In particular, artificial intelligence provides simulation activities and immediate feedback.

4.3.2 Educational technology leadership

School administrators play a critical role in ensuring that children, starting in the primary grades, receive guidance on developing stewardship for responsible consumption and creating multimedia content within a structured learning environment. Maintaining sustainable student achievement in rural schools begins with clearly defining the mission and vision of state educational mandates. Gonzales (2019) argued that the quality of a school's leadership is measured by its level of technology leadership. Educational technology leaders should continually evaluate and integrate emerging technologies, such as virtual reality and blockchain, for their educational value.

Parsons (2024) revealed three primary issues stifling technological progression in many rural schools: diverse responsibilities, lack of mentoring support, and the need for more social and professional networks to cultivate ideas and share resources. It is unreasonable to expect a rural school administrator to work in isolation and successfully integrate technology into a school. A recommendation for enhancing the utilization of educational technology in rural schools includes developing and implementing a technology policy and procedure designed to control biases and prejudices embedded in technology, which some school demographics might perceive as demeaning. Survey the attitude and acceptance of technology use. Invest in capacity building and financial stewardship to create and maintain a technology infrastructure for long-term sustainability. Integrate the school's mission and vision statement in the technology plan.

The development and implementation of the mandates must align with the technological capabilities and funding resources of rural local education agencies. California's Broadband for All, a federal and state-funded initiative designed to ensure all Californians have broadband access, was adopted as California Senate Bill 1462, Telecommunications, sponsored by Senator Padilla in 2010. In addition, a local midwestern school district, working in collaboration with a university, conceptualized an emergency remote teaching model called ERT. ERT was a temporary shift of instructional delivery to an alternate mode focused on providing short-term access to instruction and instructional support (Peterson et al., 2020).

Rural school administrators need technology coaching, mentorship, and access to mindful experiences for the administrative and teaching staff. As student populations explore and engage in diverse online platforms, educational technology leaders must establish boundaries and safeguards to ensure privacy and pupil safety measures are embedded in the curriculum and instruction tools. Initial use must focus on safe, age-appropriate, and responsible use of technology in learning environments. Transitioning from in-person to remote learning significantly widened the digital divide globally (Maree Moore et al., 2021; Mathrani et al., 2021). Educators and policymakers alike must keep a growth mindset and practice innovative leadership.

While integrating AI in schools is essential, it is essential to recognize that not all students have reliable internet access at home. Inequality in access to computers and the internet is prevalent in rural communities and areas with limited WiFi coverage, often referred to as WiFi deserts. Improving access to and engaging with online learning platforms increased technology equity and narrowed the digital gap (Katz, 2020). Academic success varies based on a student's race, ethnicity, gender, socioeconomics, linguistics, and educational attainment (Mathrani et al., 2021; Turner, 2022).

5 Limitations

Several limitations were encountered during the data collection process. The original sample size was based on more rural schools in the targeted area. In 2020, the growth rate in rural communities led the U.S. Census Bureau to reclassify rural zones as metropolitan. The population growth led to changes in the local indicators, resulting in a significant reduction from eight to three rural high schools in the targeted area. The administrative staffing was proportionately affected, affecting the potential number of participants. The researcher emailed 21 County Office of Education superintendents, superintendents of schools, and district superintendents. Only four responses were returned. Some school districts had yet to invest in technological upgrades or provide professional development in technology. One administrator had to cancel due to a scheduling conflict. This cancellation caused an interruption in data collection and a second request for a change of study with the Institutional Review Board (IRB). In another instance, a focus group participant experienced connectivity issues, resulting in call abandonment and a reduction in the sample size. Dial-in was impractical due to the poor reception in the remote rural areas.

Conclusions

Technological learning helps to form technology habits and societal expectations (Faik et al., 2020). However, limited access to technology in the learning environment may create learning barriers, such as a lack of computer literacy, poor teacher feedback, and student isolation. The capabilities include the abstraction of the person program interface details and the improvement of online education effectiveness (Ramirez & Fuentes Esparrell, 2024). Economic disparities may influence access to learning opportunities. Barriers to educational technology may become embedded in an organization's financial or leadership structure. The lack of resource allocation might increase the probability of a student encountering inequitable access to educational technology (Tate & Warschauer, 2022).

Physical, human, and social constructs that provided the framework for conceptualizing equity concerns manifested during the pandemic-induced shift to emergency distance learning (Tate & Warschauer, 2022). Demand for expanded bandwidth created additional challenges when multi-school-level children simultaneously required access to digital classrooms during school hours (Maree Moore et al., 2021). Rural households needed more high-speed internet and broadband (Puente, 2022). Changes to support instruction through online education restricted how teachers taught and how students learned (Moser et al., 2021).

Acknowledgements
The authors thank the Dissertation to Publication Workshop, College of Doctoral Studies, University of Phoenix, for supporting the preparation of this journal article. They also thank the workshop reviewer, Louise Underdahl, Ph.D., for helping to prepare and finalize the manuscript.

References

Anakwe, A., Majee, W., Noel-London, K., Zachary, I., & BeLue, R. (2021). Sink or swim: Virtual life challenges among African American families during COVID-19 lockdown. *International Journal of Environmental Research and Public Health*, *18*(8), 4290. https://doi.org/10.3390/ijerph18084290

Bansak, C., & Starr, M. (2021). COVID-19 shocks to education supply: How 200,000 U.S. households dealt with the sudden shift to distance learning. *Review of Economics of the Household*, *19*(1), 63-90. https://doi.org/10.1007/s11150-020-09540-9

Bell, D. J., Foster, S. L., & Cone, J. D. (2020). Dissertations and theses from start to finish: Psychology and related fields. (3rd ed.) American Psychological Association. https://doi.org/101037/0000161-000

Bester, V. S., & Bradley-Guidry, C. (2022). Assessing harmful bias and celebrating strength through the narratives of Black/African American physician assistant students. *Journal of Physician Assistant Education*, *33*(3), 157-163. https://doi.org/10.1097/JPA.0000000000000435

Betancourt Ramirez, E. A., & Fuentes Esparrell, J. A. (2024). Artificial intelligence (AI) in education: Unlocking the perfect synergy for learning. *Educational Process International Journal 13*(1), 35-51. https://doi.org/10.22521/edupij.2024.131.3

California Broadband Council. (2010). *Telecommunication: California Broadband Council. Ca. Stat. §338*. Retrieved from http://www.leginfo.ca.gov/pub/09-10/bill/sen/sb_1451-1500/sb_1462 bill_20100927_chaptered.html

Callaghan, N. (2021). Understanding the role of technological platforms in schools. *Educational Media International*, *58*(4), 355-373. https://doi.org/10.1080/09523987.2021.1992864

Carpenter, D., & Dunn, J. (2020). We're all teachers now: Remote learning during COVID-19. *Journal of School Choice, 14*(4), 567-594. https://doi.org/10.1080/15582159.2020.1822727

Clandinin, D. J. (2006). Narrative inquiry: A methodology for studying lived experience. *Research Studies in Music Education, 27*(1), 44-54. https://doi.org/10.1177/1321103x060270010301

Clandinin, D. J., & Rosiek, J. (2007). Mapping a landscape of narrative inquiry: Borderland, spaces and tensions. *Handbook Narrative of Inquiry: Mapping Methodology.* 35-76. https://doi.org/10.4135/9781452226552.n2

Collins, P. H., & Bilge, S. (2020). *Intersectionality* (Z. Vundla, Narr.) [Audiobook] (2nd ed.). Wiley.

Connelly, F. M., & Clandinin, D. J. (1999). *Narrative Inquiry. Issues in Educational Research* (pp. 132-140). https://doi.org//10.1016/b978-008043349-3/50013-x

Creighton, J. E., & Dewey, J. (1916). Democracy and education. *The Philosophical Review, 25*(5), 735. https://www/jstor.org./stable/2178611

Esposito, J., & Evans-Winters, V. (2022). *Introduction to Intersectional Qualitative Research.* SAGE.

Faik, I., Barrett, M., & Oborn, E. (2020). How information technology matters in societal change: An affordance-based institutional logics perspective. *MIS Quarterly, 44*(3), 1359-1390. https://doi.org/10.25300/MISQ/2020/14193

Gillis, A., & Krull, L. M. (2020). COVID-19 remote learning transition in spring 2020: Class structures, student perceptions, and inequality in college courses. *Teaching Sociology, 48*(4), 283-299. https://doi.org/10.1177/0092055x20954263

Gonzales, M. M. (2019). School technology leadership vision and challenges: Perspectives from American school administrators. *International Journal of Educational Management, 34*(4), 697-708. https://doi.10.1108/IJEM-02-2019-0075

Haynes, C., Joseph, N. M., Patton, L. D., Stewart, S., & Allen, E. L. (2020). Toward an understanding of intersectionality methodology: A 30-year literature synthesis of Black women's experiences in higher education. *Review of Educational Research, 90*(6), 751-787. https://doi.org/10.3102/0034654320946822

Katz, V. S. (2020). What it means to be "under-connected" in lower-income families. *The State of Families*, 388-390. https://doi.org/10.4324/9780429397868-76

Knutzen, K. B. (2019). A hybrid model of experiential learning within the social virtual world of second life. *Journal of Virtual Worlds Research, 12(*2), 1-17. https://doi.org/10.4101/jvwr.v12i2.7364

Lamb, A. J., & Weiner, J. M. (2021). Technology as infrastructure for change: District leader understandings of 1:1 educational technology initiatives and educational change. *Journal of Educational Administration, 59*(3), 335-351. https://doi.org/10.1108/JEA-10-2020-0220

Maree Moore, S. D., de Olivera Jayne, B., & Black, J. (2021). Disaster capitalism, rampant EdTech opportunism, and the advancement of online learning in the era of COVID-19. *Criteria Education, 12*(2), 1-24. http://ubc.ca./omdex.php/criticaled/article/view/186451

Mathrani, A., Sarvesh, T., & Umer, R. (2021). Digital divide framework: online learning in developing countries during the COVID-19 lockdown. *Globalisation, Societies and Education, 20*(5), 625-640. https://doi.org/10.1080/14767724.2021.1981253

McMahon, D. D., & Hollingshead, A. (2021). ISET's stance on special education technology and diversity, equity, and inclusion. *Journal of Special Education Technology, 36*(3), 183-184. https://doi.org/10.1177/01626434211037516

Millora, C. (2025). 'We haven't stopped working': Changing dynamics of youth and student organising in education at the height of the COVID-19 pandemic. *Globalisation, Societies and Education*, 1-14. https://doi.org/10.1080/14767724.2024.2445850

Morgan, H. (2022). Alleviating the challenges with remote learning during a pandemic. *Education Sciences, 12*(2), 109.

Moser, K. M., Wei, T., & Brenner, D. (2021). Remote teaching during COVID-19: Implications from a national survey of language educators. *System, 97*, 102431. https://doi.org/10.1016/j.system.2020.102431

Niane, H. M. (2024). *Perceived Learning Barriers Using Remote Learning in Rural Schools: A Narrative Inquiry*. (Publication No. 31560210)[Doctoral Dissertation, University of Phoenix]. ProQuest Dissertation and Thesis Global. Retrieved from https://www.proquest.com/dissertations-theses/perceived-learning-barriers-using-remote-rural/docview/3114093828/se-2

National Center for Education Statistics. (2021). *Common Core of Data*. Retrieved from https://nces.ed.gov/programs/edge/Geographic/SchoolLocations

Oster, E., Jack, R., Halloran, C., Schoof, J., McLeod, D., Yang, H., Roche, J., & Roche, D. (2021). Disparities in learning mode access among K-12 students during the COVID-19 pandemic, by race/ethnicity, geography, and grade level - United States, September 2020-April 2021. *MMWR. Morbidity and Mortality Weekly Report, 70*(26), 953-958. https://doi.org/10.15585/mmwr.mm7026e2

Parks, S. E., Zviedrite, N., Budzyn, S. E., Panaggio, M. J., Raible, E., Papazian, M., Magid, J., Ahmed, F., Uzicanin, A., & Barrios, L. C. (2021). COVID-19-related school closures and learning modality changes - United States, August 1-September 17, 2021. *MMWR. Morbidity and Mortality Weekly Report, 70*(39), 1374-1376. https://doi.org/10.15585/mmwr.mm7039e2

Partin, J., & Hayes, S. (2024). Learning from each other: Experiences of rural principals in a networked learning community. *The Rural Educator, 45*(2). 1-15. Retrieved from https://www.proquest.com/scholarly-journals/learning-each-other-experiences-rural-principals/docview/3096564558/se-2

Peterson, L., Scharber, C., Thuesen, A., & Baskin, K. (2020). A rapid response to Covid-19: One district's pivot from technology integration to distance learning. *Information and Learning Sciences. 12*(5/6). https://doi.org/10.1108/ILS-04-2020-0131

Puente, M. (2022). A critical race spatial analysis of rural Latinx students' college (in) opportunities and conscious choices during the COVID-19 pandemic. *Journal of Latinos & Education, 21*(3), 304-318. https://doi.org/10.1080/15348431.2022.2051040

Ramirez, E. A. B., & Fuentes Esparrell, J. A. (2024). Artificial intelligence (AI) in education: Unlocking the perfect synergy for learning. Educational *Process: International Journal, 13*(1), 35-51. https://doi.org/10.22521/edupij.2024.131.3

Razo, R., & Blankenship-Knox, A. (2022). The internet isn't a luxury anymore: How educational leaders can promote equitable digital access for all students. *Educational Leadership and Administration, 34*, 55. Retrieved from https://www.proquest.com/scholarly-journals/internet-isnt-luxury-anymore-how-educational/docview/2814984641/se-2

Reise, J. (2019). What is "access" in the context of qualitative research? *Qualitative Research, 19*(6), 669-684. https://doi.org/10.1177/1468794118787713

Robie, S. (2023). Supporting students with disabilities through the intentional integration of instructional technology. *Michigan Reading Journal, 55*(2), 64-68. Retrieved from https://scholarworks.gvsu.edu/mrj/vol55/iss2/11

Ruggiano, C. (2022). Adapt and serve the community! Voices of families of youth of color in predominantly white, rural communities. *The Rural Educator, 43*(1), 54-73. https://doi.org/10.35608/ruraled.v43i1.1201

Svobodová, Z., Kříž, J., & Veteška, J. (2024). Transformation of teaching through co-teaching and innovative methods. *Acta Educationis Generalis, 14*(3), 41-55. https://doi.org/10.2478/atd-2024-0017

Tate, T., & Warschauer, M. (2022). Equity in online learning. *Educational Psychologist, 57*(3), 192-206. https://doi.org/10.1080/00461520.2022.2062597

Wargo, E. S., & Simmons, J. (2021). Technology storylines: A narrative analysis of the rural education research. *The Rural Educator, 42*(2), 35-50. https://doi.org/10.35608/ruraled.v42i2.1240