

Leadership Experiences of Community in Six State-Level Supplemental Virtual School
Programs: A Qualitative Case Analysis

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Abstract

The purpose of this study was to investigate leaders' experiences with developing a culturally inclusive community and equitable learning environment in six state-level supplemental virtual programs. Two research questions were: (1) How do leaders in state-level supplemental virtual programs describe their experiences with developing a culturally inclusive community: (a) At the program level for faculty and staff? (b) At the program and course levels for students? (2) How can instructional and course design practices address barriers to virtual learning in order to facilitate an equitable learning environment for students of diverse backgrounds? This research contributes to the field of virtual leadership by representing leaders' perspectives and practices regarding how to cultivate a sense of belonging in the online community and how to address challenges with teaching and learning in this setting.

This qualitative case analysis involved leaders from six state-level supplemental virtual programs in the United States. Data were gathered using a demographic survey, semistructured one-on-one interviews, and focus groups to gain a comprehensive understanding of leadership in this setting. An online survey collected demographic data from 22 program leaders, of whom 21 from various backgrounds were purposefully selected for interviews: four executive leaders, seven directors of instruction, four curriculum leaders, two instructional designers, and four other program-area leaders.

Twelve findings were identified, with six related to a culturally inclusive community and six pertaining to an equitable learning environment. The findings described how leaders built

community at the program level for virtual employees and at the course level for teachers and students. Considerations for creating a shared sense of community included collaboration with colleagues, multiple staff roles, relationship building, frequent communication, teacher visibility, and some student anonymity. The findings also identified barriers to equity, including student access to online content, cultural representation, connectivity, device limitations, individual readiness, and support from a supervising adult. Leaders navigated some challenges through standards-aligned course design and instructional practices. Finally, a team-based approach to resolving technology issues and supporting individual learners' needs was found to help students access content and engage in their online courses.

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General Abstract

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Twelve findings were identified, with six related to a culturally inclusive community and six pertaining to an equitable learning environment. The findings described how leaders built community at the program level for virtual employees and at the course level for teachers and students. Considerations for creating a shared sense of community included collaboration with

colleagues, multiple staff roles, relationship building, frequent communication, teacher visibility, and some student anonymity. The findings also identified barriers to equity, including student access to online content, cultural representation, connectivity, device limitations, individual readiness, and support from a supervising adult. Leaders navigated some challenges through standards-aligned course design and instructional practices. Finally, a team-based approach to resolving technology issues and supporting individual learners' needs was found to help students access content and engage in their online courses.

Dedication

I dedicate this dissertation to my family, whose love and support have helped me throughout this journey. For my husband Shannon, thank you for your patience, understanding, and encouragement. For my son Emory, I hope this investment of time and effort to reach a goal will be a model for you in future years. For my parents, Frances and Geoffrey, thank you for instilling in me a love of learning and a belief that anything can be achieved through persistence and hard work.

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Chapter 1: Introduction

Overview

Educators have experienced exceptional growth and change in the field of online learning over the last 20 years (Watson, 2022). Since the early 2000s, a variety of part-time and full-time online educational models have been managed by public and private entities in the United States, and each state determines the type of schools that may operate within its jurisdiction. Leaders have been tasked with ensuring quality and accountability for teachers and students in this environment (LaFrance & Beck, 2014). Little research has been conducted on virtual school leadership (McLeod & Richardson, 2018; Richardson et al., 2015), and research has not kept pace with current practices in online learning (Barbour, 2018; McLeod & Richardson, 2018).

The online model investigated in this research is the state-level supplemental virtual program. Most state-level virtual programs have been operating since the 2000s (Rice & Skelcher, 2018), well before emergency remote learning was pushed into homes during the COVID-19 pandemic–related school closures of 2020 (Brinkmann et al., 2021; Gacs et al., 2020). Program administrators in state-level virtual programs have been working with faculty for two decades or more to plan and implement online learning models for K–12 students, yet limited research has been done to identify practices for leaders working in this environment (Barbour, 2018; McLeod & Richardson, 2018; Richardson et al., 2015). Much can be learned directly from leaders working in these K–12 programs about their experiences, the challenges they encounter, and their approaches to problem-solving. The voices of K–12 virtual program leaders are underrepresented and thus a catalyst for a study of this population.

Organization of Study

This study contains five chapters. Chapter 1 presents an introduction, background information, a statement of the problem, the purpose and justification for the study, definition of terms, and the conceptual framework. Chapter 2 includes a comprehensive review of the literature that is relevant to the research questions. Chapter 3 describes the qualitative methodology utilized in the research and data analysis. Chapter 4 focuses on the data analysis and findings. Chapter 5 offers a discussion of the major findings, implications for virtual program leaders and policymakers, and recommendations for future research.

Background Information

Distance learning opportunities at the K–12 level have existed since the early 20th century, with roots in correspondence courses where students and teachers exchanged packets of information through the Postal Service (Barbour, 2021). Barbour (2021) shared that technological innovations throughout the decades influenced the distance learning media used to connect with learners, such as educational radio in the 1920s, instructional television programming in the 1960s, telephones in the 1970s, and satellite networks in the 1980s. Web-based instruction emerged in the 1990s when California pioneered full-time K–12 online schools.

Several factors have led to a steady increase in K–12 online offerings, including a desire for more personalized learning, access to courses not offered locally, and scheduling conflicts with traditional schools (Borup et al., 2020; Lin et al., 2017; Lin et al., 2019). Archambault et al. (2016) identified a need for flexible options for students who are unable to attend traditional schools as a critical reason for families choosing online education. Online learning options are available for K–12 students in Washington, D.C. and each of the 50 states, with learners able to participate on a full-time or part-time basis (Archambault et al., 2016). According to the most

recent report published by the Digital Learning Collaborative (DLC), there were state-run virtual programs in 23 states in the 2019–2020 fiscal year, and fully online cyber schools managed by public or private organizations operate in 35 states (Watson, 2022).

State Virtual Programs

The 2022 DLC report showed that state virtual programs are created by state agencies or through legislation and receive funding through state appropriations, program course fees, or grants (Watson, 2022). The mission of state virtual programs is to support equitable access to course options for public school students, regardless of their geographic location (Rice & Skelcher, 2018). A few state virtual programs began partnering with school districts in the 1990s to provide supplemental (or part-time) instruction to students during their regular school day (Rice & Skelcher, 2018). Watson (2022) reported that partnering school districts in some states may pay all or some enrollment costs, whereas courses may be provided at no cost in other states. State virtual programs may be directed by (a) state education agencies, (b) separate nonprofit organizations, (c) charter schools, (d) higher education institutions, or (e) a separate government body, administered by a board of directors. In the 2019–2020 academic year, schools ranged in size from the smallest in Vermont, which had 2,131 semester-equivalency enrollments, to the largest in Florida, with 502,232 enrollments. Prior to the pandemic, most state-level programs worked with between 25,000 and 35,000 semester-equivalency enrollments. All state virtual programs served students in grades 6–12, while only five schools also provided instruction for elementary students during the 2019–2020 academic year.

State virtual programs have various organizational structures, but they exhibit similarities in how they operate (Watson, 2022). Leadership teams manage human resources, faculty hiring and training, technology infrastructure, student registration and reporting, instruction, and

curriculum. Online course content may be developed by curriculum leaders and teachers, licensed from vendors, or procured from various sources, such as open educational resources. School districts enroll students in virtual programs and play an important role in mentoring and supporting their online learning. One key difference between a local education agency (LEA) and state virtual programs is that virtual programs do not grant diplomas, administer state assessments, manage special education services, or provide counseling; these responsibilities remain with the LEAs. State virtual programs provide licensed teachers of record, online courses, and related instructional services for enrolled students.

Reactions to Virtual Education

Researchers and practitioners have followed the growth in virtual options at both the K–12 and higher education levels with mixed reactions (LaFrance & Beck, 2014; Lin et al., 2017). Some instructors have felt wary of embracing the online delivery format due to concerns about time, academic security, and learning outcomes (Goertler & Gacs, 2018). Others have noted the challenge of creating opportunities for learner–learner interactions and collaboration that approximate those found in a traditional classroom (Enkin & Mejías-Bikandi, 2015; González-Lloret, 2020). Some educators feared being phased out due to a switch to online learning in their geographic area (LaFrance & Beck, 2014).

On the other hand, benefits for students taking online courses include a flexible learning environment (Enkin & Mejías-Bikandi, 2015; Goertler & Gacs, 2018; Kumi-Yeboah et al., 2018; Mullen, 2020a, 2021; Saultz & Fusarelli, 2017), increased access to multimedia resources (González-Lloret, 2020; Kumi-Yeboah et al., 2018), extended time to interact with peers (Kumi-Yeboah et al., 2018), and additional cognitive processing time (Payne, 2020).

Different Learning Models

There are several differences between the two primary learning models—emergency remote instruction and planned online education—which were in place during the pandemic (Barbour, 2021; Gacs et al., 2020; Watson, 2022). Emergency remote instruction closely approximates face-to-face (F2F) instructional methods and resources (Gacs et al., 2020). This model involves temporarily using resources or lessons housed on a platform and delivered with few adaptations (Gacs et al., 2020; Watson, 2022). Viewed as a temporary solution, emergency remote instruction primarily offers whole-group synchronous classes for all students in a division (Watson, 2022).

In contrast, a planned online education involves the intentional design of vetted curricula taught by trained instructors (Gacs et al., 2020), and this model generally incorporates one-on-one synchronous instruction via a web-conferencing tool (Watson, 2022). Other characteristics of planned online learning include fully built asynchronous modules of lessons within a learning management system (LMS) and embedded support that accounts for individual learning needs to access content (Gacs et al., 2020, Watson, 2022). Watson (2022) elaborated that high-quality online learning provides consistent communication practices with families, a standardized onboarding process for learners, and well-organized content that aligns with national standards of excellence. A carefully planned online course design best supports students working in the virtual environment (Barbour, 2018, 2021; Borup et al., 2014, 2020; Borup & Archambault, 2022; Gacs et al., 2020; Watson, 2022). This study focused on the planned online learning model used by state-level supplemental virtual programs.

Statement of the Problem

Equitable learning involves cultivating an environment where all students—regardless of their background, abilities, or ethnicity—feel a sense of belonging, contribute to the course

community, and can be successful (Tate & Warschauer, 2022; Watson, 2022). According to Borup et al. (2020), online students have the best outlook for academic success when their needs for behavioral, affective, and cognitive engagement are supported by their personal and course communities. With an increasing number of students taking online courses (Tate & Warschauer, 2022), K–12 virtual program leaders are accountable for ensuring that students of diverse backgrounds and abilities have the opportunity to be successful. The following sections present challenges to facilitating an equitable learning environment that K–12 virtual leaders consider in their planning and decision-making.

Community in Online Learning

Community refers to a shared sense of space (Wenger et al., 2009), feelings of connectedness and belonging (Akcaoglu & Akcaoglu, 2022; Woodley et al., 2017), and the perception of support in the online environment (Borup et al., 2020; Kumi-Yeboah et al., 2018; Woodley et al., 2017). Collaboration is a feature of a thriving community and requires common structures, coordination, and task management for larger groups (Wenger et al., 2009). Although learning is experienced individually, it is a social construct within communities. The learning community assumes an important role in how students participate online and must be intentionally structured in virtual learning environments (Downes, 2022).

Establishing a sense of community in the online environment is challenging but necessary to support student engagement (Anderson-Mejías, 2018; Bigatel & Edel-Malizia, 2018; Borup et al., 2014, 2020; Enkin & Mejías-Bikandi, 2015; González-Lloret, 2020; Hammond, 2017; Rothstein & Haar, 2020). Low affective engagement caused by physical separation from peers, not enjoying the course, or not relating to the teacher hinders making connections (Borup et al., 2020). Another challenge to facilitating interaction in primarily asynchronous environments is the

lack of nonverbal cues in text-based communication (Rothstein & Haar, 2020). Student isolation is a well-documented concern in online learning, which can impede participation or lead to attrition from courses (Bigatel & Edel-Malizia, 2018; Jackson, 2017; Kumi-Yeboah et al., 2018; Tate & Warschauer, 2022; Wasfy et al., 2021). Tate and Warschauer (2022) suggested that a lack of peer interaction and collaboration diminishes students' opportunities for connection, critical thinking, and deeper cognitive engagement with the course material.

A culturally inclusive online community facilitates the projection of social presence, in which participants feel comfortable sharing their diverse backgrounds, perspectives, and beliefs with others (Kumi-Yeboah et al., 2018). Woodley et al. (2017) described a culturally inclusive community as “an environment that acknowledges, celebrates, and builds upon the cultural capital that learners and teachers bring to the online classroom” (p. 470). Instruction and course materials that are representative of different cultures and relevant to students of diverse backgrounds encourage learner engagement and participation in the course community (Kumi-Yeboah et al., 2018; Woodley et al., 2017). Creating a culturally inclusive course community depends on a coordinated approach to course design and teaching.

Barriers to Equity

The mandatory school closures across the United States in March 2020 due to the coronavirus pandemic led to the rapid launch of emergency remote instructional models and transferred learning facilitation to the home environment (Brinkmann et al., 2021). Without the resources previously available at the school, such as reliable broadband internet and laptops or iPads, the inadequacy of community infrastructure to support student learning from home was thrown into sharp relief. Issues of digital inequality negatively affect educational quality and students' ability to participate fully in online courses (Ball, 2022; Carillo & Flores, 2020; Gan &

Sun, 2021; Mann et al., 2021; Masry-Herzallah & Stavisky, 2021; Tate & Warschauer, 2022; Watson, 2022). A disproportionately high number of racial and ethnic minority and rural students do not have access to broadband, and they more often come from homes with lower family income levels (Tate & Warschauer, 2022). Even though students may have time allocated during the school day for their virtual classes, those without high-speed connections in the home are disadvantaged by not being able to appropriately access online course materials from home for additional study (Gan & Sun, 2021).

Researchers have cautioned that providing resources may be insufficient to help some students overcome inequity in virtual models (Anthony & Miller, 2022; Tate & Warschauer, 2022; Tienken, 2022). Other impacts on student success in the online environment include lack of adequate technology skills (Gan & Sun, 2021; Mann et al., 2021), self-regulatory skills (Tate & Warschauer, 2022), and support from a supervising adult (Borup et al., 2020; Tate & Warschauer, 2022). Tate and Warschauer (2022) identified barriers to equity in terms of access to physical, human, and social resources needed for online learning. Physical resources are the learning space, internet connection, and hardware for learning; human resources refer to individual skills that prepare students for learning online such as literacy, prior education, and self-direction; and social resources include the teachers, peers, and family who may support learning. Tate and Warschauer proposed that an online environment may exacerbate inequities for students related to factors outside their control.

Purpose and Justification of the Study

The purpose of this qualitative study was to investigate leaders' experiences with developing a culturally inclusive community and equitable learning environment in six state-level supplemental virtual programs. This research involved a case study with 22 leaders from

six state-level supplemental virtual programs in the United States. Program sizes ranged from less than 10,000 to more than 50,000 semester-equivalency enrollments served per year. Participating leaders included program and instructional directors, curriculum leaders, instructional designers, and other leaders who support teaching and learning. The case study approach utilized in this research allows for an in-depth analysis of data from multiple sources (Creswell & Poth, 2018). This qualitative research examined data from semistructured interviews and focus groups, with the aim of gaining a rich understanding of the state-level supplemental virtual program setting through the eyes of different leaders. The study addresses a gap in the literature on virtual learning by providing a window into K–12 leaders’ perspectives regarding how to address challenges with teaching and learning in this setting.

Research Questions

Two research questions guided the study:

1. How do leaders in state-level supplemental virtual programs describe their experiences with developing a culturally inclusive community:
 - a. At the program level for faculty and staff?
 - b. At the program and course levels for students?
2. How can instructional and course design practices address barriers to virtual learning in order to facilitate an equitable learning environment for students of diverse backgrounds?

Call for Theoretical Frameworks

Scholars have called for additional research grounded in established theoretical frameworks in order to drive improvements in the field of K–12 online education (Barbour, 2018; Borup, 2018; Lokey-Vega et al., 2018). Empirical studies that explore how K–12 practices support the Community of Inquiry (CoI) and Academic Communities of Engagement (ACE) in

online learning could shed light on unique considerations for this age group. Researchers have found that instructional practices that facilitate presence and build community appear to positively influence student engagement, satisfaction, and learning outcomes (Akcaoglu & Akcaoglu, 2022; Barbour et al., 2018; Bigatel & Edel-Malizia, 2018; Borup et al., 2020; Carillo & Flores, 2020; Garrison et al., 2010; Kumi-Yeboah et al., 2018; Molnar & Kearney, 2017; Mullen, 2020a, 2021; Rothstein & Haar, 2020). Research into how leaders may influence the development of presence and community could inform organizational policies and processes. This study considered data regarding presence and community building from the perspectives of the CoI and ACE.

Need for K–12 Research

Limited studies have examined leadership practices in K–12 online programs (Barbour et al., 2018; Richardson et al., 2015). Although associations can be made between promising instructional strategies for adults and younger learners, the literature for K–12 online education is limited (Barbour et al., 2018; Jackson, 2017; Lin et al., 2017; McLeod & Richardson, 2018). Scholars called for additional research to examine specific approaches when working with adolescents, who generally have higher needs for personal and academic support than do adult learners (Borup, 2018; Borup et al., 2014). The findings from this study may offer leaders working in state-level virtual programs insight into community building strategies and approaches to navigate barriers to learning. The findings may inform future research on leadership practices in other online settings, such as cyber schools. Additionally, school districts may gain insight into leadership considerations for managing district-specific virtual campuses.

Definition of Terms

A challenge in the field of online learning is inconsistent terminology, which has hindered researchers from making accurate comparisons between instructional models (Barbour, 2018). Definitions for frequently used terms are offered here to provide clarity for the context of this paper. The first set of definitions presents four of the most common learning models involving an aspect of virtual learning. The second set defines two modalities for online learning. The final set distinguishes between two models of online schools.

Table 1

Definitions of Terms

Learning Models
<ul style="list-style-type: none"> ● <i>Blended learning</i> involves the use of online tools and resources in primarily in-person learning (Watson, 2022). In blended models, students have some control over the time, place, path, or pace of their learning (Clayton Christensen Institute, n.d.). ● <i>Emergency remote learning</i> is a hybrid model that emerged during the COVID-19 pandemic in which resources or lessons are temporarily housed on a platform and delivered with few adaptations (Barbour, 2021; Gacs et al., 2020; Watson, 2022). ● <i>Hybrid learning</i> combines both in-person and remote learning and may offer extensive online activities through synchronous or asynchronous modalities (Watson, 2022). Hybrid learning incorporates both old and new technologies (Clayton Christensen Institute, n.d.). ● <i>Online learning</i> is a general term referring to education delivered via the internet, in which instruction occurs online and both the students and teachers are separated by distance (Barbour, 2018; Watson, 2022). Online learning is a type of <i>distance learning</i>, and another commonly used term for online learning is <i>e-learning</i> (Barbour, 2018).
Modality
<ul style="list-style-type: none"> ● <i>Asynchronous learning</i> refers to primarily self-paced, text-based instruction that occurs online without a teacher present (Miller et al., 2020; Mullen, 2020a, 2021). ● <i>Synchronous learning</i> refers to facilitated instruction that occurs concurrently online with a teacher present, generally through web-conferencing (Miller et al., 2020; Mullen, 2020a, 2021).
Types of Schools
<ul style="list-style-type: none"> ● <i>Virtual school</i> generally refers to a program offering supplemental online learning, in which students may take one or several online courses in addition to in-person courses at their local school (Barbour, 2018). Virtual schools may also be called <i>virtual programs</i>. ● <i>Cyber school</i> refers to a fully online program managed by a public or private organization (Barbour, 2018).

Conceptual Framework

The research questions for this study were developed using several themes that emerged from a review of relevant literature about online learning, and these themes guided the creation of a conceptual framework. According to Miles et al. (2020), a conceptual framework depicts the main factors or concepts to be studied and the relationships among them. In effect, it is a graphical representation of the data to be collected and the potential connections of the variables to one another. Figure 1, Conceptual Framework for the Experiences of State-Level Supplemental Virtual Program Leaders, represents three factors that influence leaders in their regular work and three factors that leaders influence through their decision-making and practices.

Figure 1

Conceptual Framework: Experiences of Virtual Program Leaders



Factors That Influence Leaders

The conceptual framework illustrates three core areas of information that leaders in state-level virtual programs receive and interpret: national standards of quality for programs, teaching, and course design; state-level policy; and state curriculum standards and associated assessments.

National Standards of Quality. In the conceptual framework, online leaders analyze and use national standards to inform program operations, teaching, professional development, and course design practices. Examples include the Quality Matters standards for online course design (Barbour et al., 2018; Bigatel & Edel-Malizia, 2018; Gacs et al., 2020) and the National

Standards for Quality Online Learning (NSQ), which presents three sets of program, teaching, and course design standards. Originally published in 2008, the NSQ for teaching were most recently revised in 2019 after researchers in the field and online leaders called for standards to keep pace with instructional practices (Barbour, 2018; Borup et al., 2014; Jackson, 2017; NSQ, 2019).

State-Level Policy. The accountability movement in education has led to state-level policy on topics such as teacher preparation, certification, school attendance, class sizes, standards for state-aligned curriculum, and state-mandated assessments (Rice & Skelcher, 2018). As represented by the conceptual framework, online leaders interpret and comply with state-level educational policy in program operations, reporting, and instruction.

State Curriculum Standards and Assessments. Leaders also account for state standards when designing program curriculum and preparing students for state-mandated assessments that annually measure student learning (Rice & Skelcher, 2018).

Factors That Leaders Influence

The conceptual framework represents three areas that leaders directly influence in their regular work with faculty, staff, and students: program instruction and curriculum, program-level policy, and local school partnerships.

Program Instruction and Curriculum. Online leaders work with faculty to plan, design, and implement online curriculum and instruction (Garza Mitchell, 2009; Hoey & McCracken, 2021; McLeod & Richardson, 2018; Oliver et al., 2010; Wasfy et al., 2021). Leaders also manage the learning environment infrastructure (Garza Mitchell, 2009; McLeod & Richardson, 2018) and determine which instructional tools may be integrated in online courses (Gacs et al., 2020; González-Lloret, 2020). The conceptual framework demonstrates the

connection of leaders' regular work experiences with program instruction and curriculum. This area of responsibility also accounts for the online course community in which students and faculty interact (Borup & Archambault, 2022).

Program-Level Policy. School leaders can positively impact student success through school improvement and organizational policymaking (McLeod & Richardson, 2018). The conceptual framework demonstrates how leaders must consider state-level policy requirements when creating program-level policy.

Local School Partnerships. At state-level virtual programs, leaders partner with school-based personnel, such as counselors, case managers, and learning coaches or facilitators, to support students (Watson, 2022). The conceptual framework illustrates how leaders regularly bridge the geographic distance between the virtual program and local school when working directly with students, families, and school support personnel. The communication and collaboration in this final context are reciprocated between virtual program leaders and partnering local school personnel, as both parties have a vested interest in student learning and success. In some cases, the local school may express specific student or program needs that shape leadership decisions.

Summary

This chapter contextualized background information about state-level supplemental virtual programs within the landscape of K–12 online learning. A statement of the problem, purpose statement, research questions, and justification of the study were offered. The research addressed the problem of how to develop a culturally inclusive community and an equitable learning environment for K–12 online students. Key definitions were presented to clarify terminology used

within the field of online learning. Finally, a conceptual framework provided an overview of factors that influence leadership decisions in a state-level supplemental virtual program setting.

Chapter 2 presents a literature review of practices related to online leadership, online teaching, and online course design through the lens of two theoretical frameworks, CoI and the ACE. The review offers a comprehensive examination of current sources related to planned online learning and course design at the higher education and K–12 levels. Although not exhaustive, the review acknowledges the large body of research in the field of online learning, particularly in higher education settings.

Chapter 2: Literature Review

Introduction and Purpose

The purpose of this qualitative study was to investigate leaders' experiences with developing a culturally inclusive community and equitable learning environment in six state-level supplemental virtual programs. The literature review informing this study explored relevant research about leadership and online learning in both higher education and K–12 contexts. Online leaders administer various areas of responsibility, including planning, accountability, equity and access, communication with stakeholders, hiring, instruction, and professional development (LaFrance & Beck, 2014). Given the wide range of responsibilities undertaken by online leaders, the goal of this review was to gain insight into the many factors that influence their leadership.

Search Procedures

The literature review examined relevant research about leadership, equity, teaching, community, and course design for online learning. Research related to online teaching, community, and course design was analyzed through the lens of two research-based Community of Inquiry (CoI) and Academic Communities of Engagement (ACE) frameworks. Database searches were conducted via the Virginia Tech remote library engine, including EBSCOhost and ERIC, utilizing combinations of the following keywords: *online learning, K–12, secondary, online program, educational leadership, synchronous, collaboration, community, Community of Inquiry, ACE framework, national standards, online teaching strategies, online teacher training, feedback, online course design, class size, educational policy, online program leadership, virtual schools, teaching presence, social presence, cognitive presence, culturally inclusive community, and equity*. Searches continued through January 31, 2024.

The searches were primarily limited to peer-reviewed journal articles, chapters, and books. The search was narrowed by focusing on research between 2017 and 2024 to identify recent publications in the field, and terms were combined to reveal more specific results. Research from the United States and international sources was considered in this review. Most searches yielded publications with a higher education focus, from which studies were considered when connected to the CoI, ACE, online instruction, course design, community, equity, or educational leadership. Sources with a primary focus on emergency remote, hybrid, or blended learning models were excluded. A review of the first 100 titles and abstracts for each search yielded many results that did not meet the inclusion criteria, which were disregarded. Table 2 provides an overview of the search term combinations and results generated.

Table 2*Search Criteria for Literature Review*

Search terms	Database	Years	Results
Online Learning AND K–12	ERIC	2019–2024	1,554
Online Learning or E-learning or Distance Learning AND K–12	EBSCOhost	2017–2024	774
Online Program AND K–12 AND Educational Leadership	ERIC	2019–2024	861
Online Learning AND K–12 AND Collaboration	ERIC	2019–2024	119
Online Learning AND K–12 AND Community of Inquiry	ERIC	2019–2024	272
Online Learning AND ACE Framework	ERIC	2019–2024	39
Online Learning or E-learning or Distance Learning AND ACE Framework	EBSCOhost	2017–2022	3
Online Learning or E-learning or Distance Learning AND ACE Framework	ERIC	2012–2024	147
Online Learning AND K–12 AND National Standards	ERIC	2019–2024	134
Online Teaching Strategies AND K–12 AND Online Teacher Training	ERIC	2019–2024	82
Online Learning AND Online Teaching Strategies AND Best Practices	EBSCOhost	2017–2024	14
Online Learning AND Feedback AND K–12	EBSCOhost	2017–2022	36
Online Course Design AND K–12 AND Best Practices	EBSCOhost	2017–2024	2
Online Learning AND K–12 AND Class Size	EBSCOhost	2017–2022	1
Online Learning AND United States AND Educational Policy	ERIC	2018–2022	97
Online Program AND K–12 AND Educational Policy	ERIC	2018–2024	530
Online Program Leadership AND K–12 AND Virtual Schools	EBSCOhost	2017–2024	12
Online Learning AND K–12 AND Teaching Presence OR Social Presence OR Cognitive Presence	ERIC	2019–2024	407
Online Learning AND Culturally Inclusive Community	ERIC	2019–2024	1856
Online Learning AND K–12 AND Equity	ERIC	2019–2024	73
Online Learning AND K–12	ProQuest	2019–2024	192

Note. ACE = Academic Communities of Engagement; ERIC = Education Resources Information Center.

Overview of Sources Reviewed

Overall, 66 peer-reviewed articles, 16 book chapters, two sets of national standards, two dissertations, five books, a state-level guidance document, six national reports, and two peer-reviewed conference proceedings were reviewed. An early publication by Garrison et al. (2000) regarding the CoI was considered in this review, as the authors' concept of teaching, social, and

cognitive presences has been cited in the field of online learning as a foundational framework (Akcaoglu & Akcaoglu, 2022; Barbour, 2018; Borup et al., 2014, 2020; Carillo & Flores, 2020; Lokey-Vega et al., 2018; Kumi-Yeboah et al., 2018; Miller et al., 2020; Mullen, 2020a, 2021; Rubio et al., 2018). Similarly, an early publication from Moore (1997) regarding the theory of transactional distance was included. A follow-up article re-examining the CoI by Garrison et al. (2010) was considered from the references section in Jackson's (2017) analysis of standards for online learning. Two recent Virginia dissertations related to the topic were included. A study from 2009 of online educational leadership at the community college level was included. It was one of a few articles on leadership approaches to online learning at the higher education or K–12 level. This review also included two peer-reviewed articles by Archambault et al. (2016) and Barbour (2018), and a book chapter by Barbour et al. (2018).

Methods Used in Sources

A variety of research methods were used to investigate community and equity as related to online leadership, teaching, and course design. Of the studies reviewed for this research, 26 were qualitative, with 15 higher education sources and 11 sources at the K–12 level. Sixteen quantitative studies were reviewed, with nine in higher education level and seven in K–12. Additionally, 28 literature reviews and seven mixed-methods studies were included. A literature review table identifying salient sources, research methodology, and relevant themes to the research is shared in Appendix A.

Organization of Review

The first section of this review provides an overview of online leadership, leader preparation, equity, and policy considerations related to accountability measures. The second section also introduces two theoretical frameworks for online education that will be related to

teachers, instruction, and course design. The third section defines the role of the online teacher according to national standards. This section also explores teacher preparation, professional development, and evaluation in the virtual environment. The fourth section of the review discusses teaching presence as related to student engagement and instructional practices, such as communication and feedback. The fifth section addresses social presence, community, and challenges such as isolation and attrition. The last section defines cognitive presence and explores how online course design accounts for different learner needs, facilitates collaboration, and provides opportunities to engage with content and situate knowledge.

Leadership Considerations for Online Learning

The administration of K–12 online programs is an emerging leadership field, and limited studies have evaluated leadership practices for planned online instruction and course design at this level (Barbour et al., 2018; Richardson et al., 2015). McLeod and Richardson (2018) noted that most K–12 research focuses on building administrators and recommended additional research and training that advances the field of online leadership. Specifically, field experiences in virtual environments during administrator preparation programs may help expose prospective leaders to unique aspects of online leadership (McLeod & Richardson, 2018; Richardson et al., 2015). Studies focusing on higher education can inform K–12 online leaders of strategies and recommendations for working with younger learners (Barbour, 2018), although the needs and approaches can differ between adolescents and adults (Borup et al., 2014, 2020).

Leadership Approaches and Attributes

A shared leadership model can empower faculty and strengthen an organizational structure (Badger, 2022; Wasfy et al., 2021). Education policies that promote shared decision-making can positively influence the school culture (Tienken, 2022). At The Pennsylvania State University,

Redmond (2020) suggested that a shared team leadership model enabled faculty to rapidly respond to change, provide a holistic response to issues, and support a competitive program through consistent enrollments. While this approach is best suited for online programs with a participative organizational culture, shared team leadership allows leaders to mobilize efforts across multiple areas to guide program-wide initiatives.

Leading During the COVID-19 Pandemic. Reflecting on how the pandemic has driven change in instructional models for both traditional school divisions and virtual schools, Barbour (2021) suggested that innovation has occurred in four phases: phase 1, a rapid transition to altered instructional models; phase 2, integration of supports to implemented models; phase 3, an extended transition between F2F and online models; and phase 4, an emerging “new normal” with improved infrastructure supporting online models. Carillo and Flores (2020) recognized that change driven by the pandemic has also altered the field for educators and students in higher education. In order to better understand the implications of processes and outcomes associated with online learning, the authors recommended a research-based approach to inform program models (Carillo & Flores, 2020).

Masry-Herzallah and Stavisky (2021) found that transformational leadership behaviors related to charismatic influence, intellectual stimulus, and personal consideration can be effective during change and crisis. Specifically, leader communication that provides a stable foundation for promoting instructional innovation can encourage teacher success in the online environment (Masry-Herzallah & Stavisky, 2021). Wasfy et al. (2021) noted that consistent communication practices enable leaders to work successfully with faculty and students, and that decisiveness was a desirable leadership characteristic during times of crisis.

A qualitative phenomenological study by Brinkmann et al. (2021) surveyed and interviewed educators in multiple states about leadership experiences during the first year of the pandemic. A focus group of leaders ($N = 13$) shared that the most challenging aspects of working with students in the virtual environment included building relationships, implementing online curriculum and instruction, accounting for social and emotional wellness, and engaging students when learning remotely. Faced with an unfamiliar algorithm for school operations, many school leaders felt inadequately prepared to guide their faculty and community in launching virtual learning during year one of the pandemic. The authors recommended reflective coaching tools to build leaders' self-efficacy in unfamiliar environments.

Essential Knowledge and Skills. Online teaching involves different policies and procedures than those in the classroom; as a result, online leaders must be prepared to guide instruction, training, course development, and student support processes that are unique to this environment (Garza Mitchell, 2009; McLeod & Richardson, 2018). Similarly, online directors in higher education often oversee multiple areas such as staffing, advising, recruitment, curriculum management, assessment, and evaluation (Hoey & McCracken, 2021; Wasfy et al., 2021). Essential knowledge for leaders includes understanding the research-based standards, pedagogy, technology, and course design principles for online education (Garza Mitchell, 2009). Additionally, leaders need to be well-versed in the online platform to assist faculty and make informed decisions about infrastructure, including how courses are configured and the learning tools made available (Garza Mitchell, 2009; McLeod & Richardson, 2018). Wasfy et al. (2021) and Badger (2022) recommended transparent communication practices to guide faculty, particularly when navigating change. At the K–12 level, frequent leadership communication with families reinforces important information and student expectations (Badger, 2022). Online

leaders are also encouraged to implement teamwork to achieve goals collaboratively, a visionary approach to anticipate future needs, and proactive responses to sustain the organization or group (Wasfy et al., 2021).

Leading Course Development. A qualitative study with eight course development teams of teachers at North Carolina Virtual Public School examined the support that content developers need when creating online courses (Oliver et al., 2010). Through focus group interviews and a follow-up survey, the authors determined that developers benefit from clear guidance about the process and expectations for what to include in courses, including adequate practice to account for student needs. Furthermore, they shared that leaders should provide developers with training on using course design tools, the LMS, and copyright compliance. Finally, participants demonstrated a desire for regular feedback, encouragement, and technical expertise from curriculum leaders.

Equity Considerations for Online Leaders

Online leaders are tasked with working to ensure equity and access to learning (LaFrance & Beck, 2014; Rice & Skelcher, 2018). An equitable environment is one where students of all backgrounds and abilities feel a sense of belonging, contribute to the learning community, and have the opportunity to be successful (Tate & Warschauer, 2022; Watson, 2022). Kelly and Zakrajsek (2021) proposed that social and psychological feelings of belonging in the online community affect student persistence and are an element of equitable learning. A focus on social inclusion points to ensuring that students have the individual and social resources needed to support their learning (Tate & Warschauer, 2022). Two factors that influence equitable access to online learning are high-speed connectivity and devices (Anthony & Miller, 2022; Ball, 2022; Brinkmann et al., 2021; Cash et al., 2020; Gan & Sun, 2021; Mann et al., 2021; Tate &

Warschauer, 2022; Watson, 2022). Brinkmann et al. (2021) found that a lack of internet and access to instruction profoundly affected teaching and learning during the pandemic. Researchers warned that initiatives seeking to provide only technology may be inadequate to help some students overcome the inequity in virtual models (Anthony & Miller, 2022; Mann et al., 2021; Tate & Warschauer, 2022; Tienken, 2022).

Tate and Warschauer (2022) identified barriers to equity in terms of access to physical, human, and social resources needed for online learning. Students rely on consistent physical resources such as the learning space, internet connection, and hardware. Human resources refer to individual readiness factors that prepare students for learning online, such as literacy, prior education, and self-direction. In the final context, students depend upon social support for their learning from teachers, family, and their peers. Other researchers agreed that adolescent learners benefit from a supportive adult to encourage and monitor learning (Anthony & Miller, 2022; Ball, 2022; Borup, 2018; Borup et al., 2020; Tate & Warschauer, 2022).

In a literature review, Anthony and Miller (2022) suggested that there are four leadership approaches to educational equity during the pandemic: equal treatment of students, access to education, school outcomes, and shared school and community outcomes. In the first approach, leaders seek to apply fair policies regarding an equal distribution of services and resources among students. In the second, leaders attempt to provide equal access to educational opportunities. Leaders may engage in division-wide efforts to increase attendance, provide internet access, and ensure that students are issued needed devices. The third approach entails the use of data to inform systemic inequities at the school level. Leaders analyze these data when determining responses to address achievement gaps, personalized learning, and culturally relevant instruction. In the fourth approach, representatives from both the school and community

analyze data to co-construct mutually beneficial solutions. An example offered by the authors was joint advocacy for universal broadband access.

Policy Considerations for Online Leaders

K–12 online learning differs from other types of distance education in that schools must comply with state requirements for teacher certification, funding, quality standards for seat time and attendance, family involvement, and standards-aligned curriculum (Rice & Skelcher, 2018). Key policy themes for K–12 online learning include accountability measures such as teacher preparation, standards and analytics, and equity and access. Archambault et al. (2016) reported that eight states (Georgia, Idaho, Louisiana, Michigan, South Carolina, South Dakota, Utah, and Vermont) had online learning standards. In comparison, two states (Georgia and Idaho) offered a voluntary online teaching licensure endorsement. According to Rice and Skelcher (2018), the accountability movement in education derives from the recognition that attendance alone is insufficient to demonstrate that students are learning. State and national policies increasingly call for evidence-based learning established through standards-aligned instruction and measured through learner analytics.

Attendance. An important policy consideration is attendance, which is tied to state funding, and measuring attendance in online learning has been addressed by policymakers in some states (Molnar et al., 2019; Rice & Skelcher, 2018). The Colorado Department of Education (CDOE) created a policy specifically addressing compulsory attendance in online classes (CDOE, n.d.; Rice & Skelcher, 2018). Although the policy recognizes that the time spent in an online course is not necessarily equivalent to the time spent in a traditional classroom over 1 year, the metrics for reporting attendance are based on student logins and hours accrued in the course log (CDOE, n.d.). In contrast, the Ohio Department of Education developed an online

attendance policy based on demonstrated learning mastery rather than seat time (Ohio Department of Education, 2018). Watson (2022) reported that online programs and schools are increasingly shifting to mastery-based learning, which has necessitated additional accountability indicators.

In the absence of state policy on virtual learning in Virginia, *Virtual Education in Virginia: A Collection of Supports and Resources (VEV)*, published by the Virginia Department of Education (VDOE) in 2021, has served as the first statewide guide for virtual learning in the Commonwealth. Through this document, the VDOE directed division leaders to establish local policies for measuring attendance using time-based or task-based meaningful interactions. This approach allowed flexibility for local divisions to quantify attendance measures for online learning based on student participation and communication: “Meaningful interactions are understood here as two-way engagement with a student and staff that allows some sort of feedback or input from the student on successes and challenges” (VDOE, 2021, p. 12). Local division leaders were asked to define the frequency of meaningful interactions and attendance checks, with minimum daily check-ins for elementary students and weekly check-ins per content area for secondary students.

Student Performance Outcomes. Student performance and overall achievement in virtual schools are accountability considerations for educational leaders and policymakers (Molnar et al., 2019). Increasing attention has been placed on competency-based models that measure student progress according to evidence of content mastery. They proposed that there is a lack of empirical data to fully inform how a competency-based approach to online learning may support student growth and achievement. Lin et al. (2019) shared that a lack of access to K–12 courses has made it difficult to research instruction and student outcomes for this population.

Tate and Warschauer (2022) found that K–12 online learning studies were generally unable to control for demographics, reasons for choosing a virtual option, assigned teachers, curriculum differences, and pedagogical approaches. They concluded that K–12 online students generally perform at levels similar to those in higher education, with online course outcomes measuring -0.10 to -0.30 *SD* worse than in-person outcomes. Several researchers at the higher education level have compared online learning and face-to-face experiences and they found that student performance outcomes were comparable regardless of modality (Enkin & Mejías-Bikandi, 2015; Gacs et al., 2020; Goertler & Gacs, 2018; Mullen, 2020a, 2021; Rothstein & Harr, 2020; Rubio et al., 2018). In a review of several K–12 studies, Tate and Warschauer (2022) noted that African American and Hispanic students in high school online credit recovery courses had a larger performance gap than other populations. Kumi-Yeboah et al. (2018) found that African American and Hispanic students in a full-time online school had little or no disciplinary issues when learning virtually, which allowed students to focus on their academic work. They also proposed that parental involvement with monitoring progress and the equitable availability of online learning resources promoted academic achievement. Further research into student outcomes and achievement for K–12 populations learning online is recommended (Kumi-Yeboah et al., 2018; Tate & Warschauer, 2022).

Student Placement. Borup (2018) called for policymakers to articulate the roles and responsibilities for parental involvement in K–12 online education to increase engagement support, boost student achievement, and improve graduation rates. The *VEV* (2021) guidelines reinforced the responsibility of local school divisions in developing policy regarding parental input on the appropriate instructional environment for learners and establishing clear benchmarks for online student participation. The guidelines also proposed a locally driven intervention

process to determine inadequate student progress necessitating a return to the classroom, which acknowledged that virtual learning is not an appropriate option or placement for all students. At a minimum, the *VEV* (2021) recommended that divisions implement monthly progress evaluations for students eligible under the Individuals with Disabilities Education Act (IDEA) to monitor the appropriateness of a virtual placement.

Considerations for Supporting Students With Disabilities

Students with disabilities benefit from a flexible learning environment with support from both teachers and their families (Repetto et al., 2018; Rice & Carter, 2016). Two-way communication is essential when teaching students with disabilities and requires responsiveness from families (Adigun et al., 2022; Rice & Carter, 2015). Adigun et al. (2022) suggested that limited verbal and nonverbal cues from learners with disabilities in online communication may constrain teachers' ability to provide timely and appropriate feedback. Frequent monitoring of learner progress was a strategy used by online teachers to assist students with disabilities (Repetto et al., 2018; Rice & Carter, 2016).

Researchers have called for additional professional development and training to prepare teachers for working with different populations of students in the online environment (Repetto et al., 2018; Rice & Carter, 2016). Educators who implement evidence-based practices in online instruction are better able to assist students with disabilities (Repetto et al., 2018). With regard to course pacing, Repetto et al. (2018) called for a flexible approach to support students with disabilities, whereas Rice and Carter (2016) found that online teachers often pushed all students to maintain an established pace for their coursework.

A planned online learning design that aligns to the Universal Design for Learning (UDL) principles is a proactive measure that can anticipate a variety of students' learning needs

(Repetto et al., 2018). Rice and Carter (2016) proposed that teachers using a set curriculum that they did not write creates tension in being able to modify content and accommodate students with disabilities. They called for course designers to incorporate design features and activities that encourage students to regulate their own learning and assess their understanding as they move through lessons. A learning model that breaks up tasks and incorporates small group lessons was recommended.

Repetto et al. (2018) suggested that online leaders in schools serving students with disabilities should implement policies that foster a supportive learning environment and caring community. They proposed that students learn best in an environment that recognizes each individual student as an important member of the learning community. Faculty build relationships with students by creating a sense of shared time and space through regular interactions (Rice & Carter, 2015). Knowing students well is a factor in being able to anticipate their need for accommodations within the learning platform (Rice & Carter, 2016). In the course community, student collaboration that encourages positive connections and cooperative learning supports students with disabilities (Repetto et al., 2018): “Students need to feel a sense of cohesion and awareness of their peers, both with and without disabilities” (p. 171). Students’ interactions online are mediated by teaching, social, and cognitive presence in the course community—the overarching goal of which is to achieve self-directed learning (Rice & Carter, 2015).

Defining Frameworks

Examining literature from the field using established theoretical frameworks can help clarify the roles and responsibilities of online leaders (Lokey-Vega et al., 2018). This review considers two established frameworks: the Community of Inquiry (CoI) and the Academic

Communities of Engagement (ACE), as related to online teaching, community development, and course design. An overview of each framework follows.

Community of Inquiry (CoI). Garrison et al. (2000) defined three interdependent constructs, or presences, which they consider essential to creating a CoI for learners. Drawing on an additional decade of scholarship, the authors reflected on their original study and suggested that the ideal learning environment occurs when three presences—teaching, social, and cognitive—intersect for learners in the online course community. The degree of facilitation for these three elements may enhance or inhibit a student’s experience when learning online (Mullen, 2020a). The CoI framework has been well-documented in studies analyzing virtual learning experiences (Akcaoglu & Akcaoglu, 2022; Barbour, 2018; Borup et al., 2014, 2020; Carillo & Flores, 2020; Lokey-Vega et al., 2018; Kumi-Yeboah et al., 2018; McHugh et al., 2020; Miller et al., 2020; Mullen, 2020a, 2021; Rubio et al., 2018). Although the CoI initially referred to discussion-based communication in a computer science course at the university level, researchers have proposed that the concept of *presence* can apply to many other content areas in online learning (Barbour, 2018; Borup et al., 2014; Rothstein & Haar, 2020).

Academic Communities of Engagement (ACE). Noting the CoI’s initial limitation in scope, Borup et al. (2020) called for researchers to find “better theoretical frameworks that explain the role and interaction of important supplemental relationships and personal communities (e.g., families and friends) that support students’ engagement” (p. 808). Building on the concept of the CoI’s three interdependent presences, Borup et al. (2014) proposed the Adolescent Community of Engagement (ACE) framework that defined engagement of K–12 learners online in four ways: teacher engagement, student engagement, peer engagement, and parent engagement. The addition of the parent engagement context formally recognized the role that families can play

in supporting learners (Barbour, 2018; Borup et al., 2014, 2020; Kumi-Yeboah et al., 2018). Lokey-Vega et al. (2018) shared that the ACE offers a means of analyzing how adolescents engage in online learning contexts to identify potential areas for improvement. Six years later, a revised framework—renamed the Academic Communities of Engagement—anchored the concepts of engagement and support using Vygotsky’s zone of proximal development (Borup et al., 2020; Graham & Halverson, 2022). The revised framework examines how affective, behavioral, and cognitive engagement increase when students are supported by both their course and personal communities (Borup et al., 2020; Graham & Halverson, 2022; Tuiloma et al., 2022). Molnar et al. (2019) noted that the ACE framework has been well-tested by practitioners, leading to a refined model focused on actions that support learners rather than on learner attributes.

Defining the Role of Online Teachers

This review will next address how the national standards and literature have defined the roles of online teachers. Online educational leaders are responsible for teacher supervision and evaluation (McLeod & Richardson, 2018), and the national standards can inform needs for professional development and teacher performance interventions (Gallup et al., 2021). Researchers have been working to keep pace with the changing practices of online teachers, particularly over the past decade, as pedagogy, tools, platforms, and models have evolved (Barbour, 2018). Jackson (2017) suggested there was a lack of empirical evidence of K–12 online teaching best practices that could be used to establish instructional standards. Rapid evolution in the field has resulted in a disconnect between accurately representing what online teachers do in their regular work and increasingly outdated national standards (Barbour, 2018; Jackson, 2017).

National Standards for Quality Online Teaching

A shift in how the national standards define online teaching has occurred over the past three decades (NSQ, 2019). Initially published in 2008, the national standards for online teaching were revised in 2011 by the International Association for K–12 Online Learning (iNACOL). This revision took into account contemporary research in the field as well as feedback from online administrators, instructional designers, researchers, and content developers (iNACOL, 2011; Jackson, 2017). The revised iNACOL standards presented 11 domains separated into specific categories of knowledge and abilities for instructors working fully online or incorporating a blended model into classroom instruction. Researchers articulated a need for updating the second-edition iNACOL standards to represent practices and an emerging body of literature supporting teaching, social, and cognitive presence in online learning (Barbour, 2018; Borup et al., 2014; Jackson, 2017). The third edition of the NSQ, published in 2019 through a partnership between the Virtual Learning Leadership Alliance and Quality Matters, recognized several changes in the field (NSQ, 2019). The 2019 standards were condensed into eight categories with indicators and examples focusing strictly on fully online instruction, which distinguished between online and blended learning models for classrooms (NSQ, 2019).

Presence in the National Standards. In a close examination of the second-edition iNACOL (2011) standards, Jackson (2017) noted that the concept of *presence* was absent from the standards, with one indirect reference in Standard C related to the development of community and trust. The updated NSQ (2019) formally recognized online *presence*, specifically mentioning the term eight times in Standard B: Digital Pedagogy and Standard C: Community Building. According to the NSQ (2019), the role of online teachers has been expanded to include specific facilitation tasks related to establishing community in the online classroom. For example, Standard C: Community Building elaborated on the role of community to incorporate

teacher-facilitated opportunities for active learning, interaction, and collaboration. This standard also accounts for adapting instruction to meet diverse student needs due to varied cultural backgrounds and perspectives.

Changes to the National Standards. Additional changes have occurred in online teachers' roles concerning digital citizenship and course assessments (NSQ, 2019). Borup et al. (2014) recognized that teachers model and support digital citizenship for their students through both synchronous and asynchronous interactions. The second-edition iNACOL (2011) standards addressed the teacher's responsibility for digital citizenship in terms of setting norms and standards for student behavior. In contrast, the third-edition NSQ (2019) more broadly articulated the teacher's role in modeling, guiding, and facilitating "legal, ethical, and safe behavior related to technology use" (p. 19). This update formalized the responsibility of teachers to help students safely navigate the internet, demonstrate academic integrity, and communicate with respect (NSQ, 2019). Another update from the second-edition iNACOL standards was the combination of Standards G and H—addressing assessment and measurement, respectively—and the removal of standards regarding teacher-authored assessments (NSQ, 2019). This revision acknowledged that the task of course design is not always accomplished by the instructor in some program models (Barbour et al., 2018; NSQ, 2019; Thomas & Graham, 2019).

Online Teacher Training and Professional Development

Teachers and content developers often receive limited training in technology tools or LMS usage at the higher education level (Barbour et al., 2018). In contrast, several K–12 online programs, such as the Virtual High School Collaborative and Florida Virtual School, provide extensive training for teachers and developers during the induction process (Barbour et al., 2018). One way to assist educators transitioning to online instruction is through professional

development that addresses online pedagogical approaches and how to integrate learning technologies (Akcaoglu & Akcaoglu, 2022; An, 2021; Martin et al., 2019; Philipsen et al., 2019; Russell, 2020). Following a mixed-methods study with adjunct instructors ($N = 86$) at the higher education level, Gurley (2018) asserted that teachers who complete a formal certificate training program feel more confident about facilitating online learning. Instructional designers and others in a technology support role can help teachers understand the educational tools and LMS used for course delivery (An, 2021; Barbour et al., 2018; McGee et al., 2017; Russell, 2020).

Essential Knowledge. Scholars have offered multiple perspectives about fundamental knowledge for online educators. Researchers recommend that online teachers acquire knowledge related to content-specific pedagogy (Martin et al., 2019; Russell, 2020), accessibility supports (An, 2021; Gacs et al., 2020; Martin et al., 2019), course design (Akcaoglu & Akcaoglu, 2022; Barbour et al., 2018; Gacs et al., 2020; Martin et al., 2019), and copyright compliance (An, 2021; Gacs et al., 2020). Mullen (2021) proposed training teachers on how to facilitate interaction and nurture learning in synchronous instruction. Kumi-Yeboah et al. (2018) suggested incorporating professional development in facilitating collaborative learning and understanding how multicultural experiences can affect academic performance for online learners.

Benefits of Collaboration. Online teachers benefit from working in a collaborative environment where they can share instructional strategies with colleagues (McGee et al., 2017; Philipsen et al., 2019). Wenger et al. (2009) proposed that a community of practice is defined by the participants' capacity to learn together: "Learning is not just a matter of sharing knowledge or discussing issues. Members need to do things together in order to develop their practice" (p. 79). A collaborative professional development model where educators compare instructional ideas and

develop materials with instructional designers increases teachers' skills and confidence (McGee et al., 2017).

Developing Expertise. In a qualitative modified Delphi study involving experienced online teachers in higher education, McGee et al. (2017) identified essential supports for developing expertise in online teaching, including (a) additional time for course design, (b) training that models best practices, (c) mentoring, and (d) feedback from peers in a community of practice. The authors proposed that the process of learning—in effect, developing expertise—was more valuable than was the development of specific skills for online teaching. A limitation of this study was the focus on teachers with at least 2 years of experience working online, whereas the inclusion of novice online teachers may have resulted in a different ranking of essential supports.

Collegial Presence. Sanders and Lokey-Vega's (2020) qualitative study with four secondary social studies teachers from a virtual high school explored the effectiveness of teaching practices aligned to the CoI. They found that collaboration with parents, colleagues, supervisors, and support staff helped to establish *collegial presence*. Collegial presence is defined as the meaning constructed by colleagues working together to support online students that promotes better facilitation of teaching, social, and cognitive presence. The authors proposed that collegial presence is an important element in the K–12 educational experience and is critical for student success.

Online Teacher Evaluation

Online teaching tasks differ from F2F and blended instruction, and researchers recommend evaluation practices that represent the responsibilities associated with working in a virtual environment (Gacs et al., 2020; Thomas & Graham, 2019). Gallup et al. (2021) acknowledged the lack of research on teacher evaluation that could help prepare preservice

teachers for online instruction. Thomas and Graham's (2019) content analysis at the postsecondary level determined how observational rubrics address online teaching. Based on their findings from a sample of seven institutions, the authors recommended that observational rubrics assess instructional behaviors, incorporate items related to building community with students, and provide a comprehensive measure of online teaching competencies. At the K–12 level, online leaders could benefit from evaluative instruments unique to the online setting that measure teachers' knowledge, skills, and performance (McLeod & Richardson, 2018).

Teaching Presence and Online Instruction

McLeod and Richardson (2018) noted that school leaders may positively impact student success through school improvement and organizational policymaking. Working closely with teachers, K–12 leaders set benchmarks that guide instruction and can influence the overall learning climate of a school or program (McLeod & Richardson, 2018). This section of the review examines teaching presence as related to student engagement and instructional practices such as communication and feedback. First, a definition of teaching presence is offered.

Garrison et al. (2000) proposed the role of online teaching presence to be the facilitation and direction of student learning on intended outcomes in a computer-based environment. The authors defined three core areas for developing online teaching presence: the planning and design of course content and lessons, the facilitation of learning activities, and direct instruction (Akcaoglu & Akcaoglu, 2022; Garrison et al., 2010; Jackson, 2017; McHugh et al., 2020; Rubio et al., 2018). According to Jackson (2017), cultivating teaching presence involves creating a comfortable, organized learning environment for students and facilitating positive interactions during direct instruction. Whereas Garrison et al. (2010) acknowledged that their analysis of teaching presence focused on the computer conferencing modality through discussion boards,

Rubio et al. (2020) found that teaching presence established through a variety of communication tools is a crucial component of online language courses.

Influence of Teaching Presence on Student Engagement

Borup et al. (2014) suggested that the ACE concept of teacher engagement is similar to teaching presence in the CoI, although it differs in a few ways for younger learners. In K–12 online learning, different individuals may fulfill instructional roles, such as designing content, facilitating activities, and providing direct instruction (Borup et al., 2014, 2020). According to the ACE model, effective K–12 teachers engage students and their families through regular communication, and, in turn, students are supported by both their school and personal communities. Bigatel and Edel-Malizia (2018) defined student engagement in terms of how students interact in their courses: “Student engagement involves not only what instructors do to engage students, but also what students do in the way of instructional activities” (p. 58). This broad definition of engagement includes how students spend their time in their academic courses and how teachers work with students (Bigatel & Edel-Malizia, 2018). At the K–12 level, teachers nurture learners in the course environment by monitoring and motivating them to participate in course activities (Borup et al., 2014).

Student Attendance. Kim and Fienup (2022) and Badger (2022) identified several challenges for K–12 students that negatively affect attendance and assignment completion, such as low student technology skills, a lack of parental support, and inconsistent expectations for online learning. Kurnaz et al. (2018) suggested that teacher interaction with students can influence their motivation and attendance. Kim and Fienup (2022) found that the roles of both the teacher and family were essential to connect the student to the content, which is consistent with the ACE communities of support (Borup et al., 2020). Teacher-implemented incentives,

such as virtual rewards and positive reinforcement, boosted student participation and attendance (Badger, 2022; Kim & Fienup, 2022). Regular attendance increased access to learning opportunities, which is particularly important for students with disabilities, and monitoring attendance was found to be a reliable indicator of intervention needs (Kim & Fienup, 2022). Badger (2022) noted that students with poor attendance had lower grades than those of their peers with consistent attendance and called for leaders to establish stricter requirements for synchronous session attendance.

Teacher Interaction. Researchers have proposed that Moore's theory of transactional distance can inform K–12 online instructional practices (Barbour, 2018; Borup et al., 2014; LaFrance & Beck, 2014). Moore's theory posits that learners perceive varying degrees of distance between themselves and their instructors based on their level of interaction (Barbour, 2018; Moore, 1997). Courses with a low transactional distance offer more flexibility and a higher-touch instructor presence, and these courses can be personalized for younger students who are generally less autonomous than adult learners (Barbour, 2018). A mixed-methods study at the higher-education level explored the transactional distance between specific course constructs, such as communication methods, frequency of communication, and student satisfaction in online graduate-level MBA courses (MacLeod et al., 2019). By identifying communication behaviors that generated the greatest transactional distance for online learners, instructors were able to use the data as a catalyst for course improvements. When instructors addressed the interactions of concern, student satisfaction in those areas generally improved. The authors suggested an association between student perceptions of their success in the online environment and adapting teacher interactions to support student needs.

Impact of Teaching Presence. In a reflection on the implications of the CoI framework in online learning after a decade of practice, Garrison et al. (2010) concluded that although instructional models will vary, teaching presence remains a contributing factor in overall student satisfaction and perceived learning in the online environment. Studies by Mullen (2020b), Rubio (2018), and McHugh et al. (2020) indicated that teaching presence directly impacts how students feel about their learning and how they participate in online.

Teaching Presence Through Mentorship. Mullen's (2020b) empirical study with educational leadership doctoral students during the pandemic revealed that dyadic online mentoring using web-conferencing reinforced mentee supports and combatted attrition during the dissertation process. "Candidate satisfaction and success, the feeling of presence and care that connectivity can stimulate, and culturally responsive mentoring necessitate sustainability" (p. 19). Successful mentorship strategies included consistent communication and feedback practices through synchronous and asynchronous tools. A social justice approach to fostering relationships encouraged and empowered mentees to overcome challenges when learning virtually. Likewise, school leaders benefit from this approach to promote success with younger students learning online. This finding supports the importance of facilitating both teaching and cognitive presence for student progress (Garrison et al., 2000, 2010; Miller et al., 2020).

Teaching Presence and Student Autonomy. Rubio et al.'s (2018) study directly compared teaching presence for both F2F and online modalities in higher education Spanish courses. They found that students assumed a more active role in managing their learning when working through the asynchronous components of the course. This finding suggests that a shift in the teacher's role from directly monitoring and implementing F2F instruction to managing online activities encourages student autonomy.

Teacher Presence and Student Satisfaction. McHugh et al.'s (2020) single longitudinal case study investigated how refining teacher presence in an MBA program positively impacts student satisfaction and faculty ratings. The 2-year case study involved changes made to instructional delivery with guidance from an instructional designer prior to the second year. Modifications included condensing the syllabus, changing discussion board facilitation strategies, and beginning the course with synchronous video conferencing. The authors found that small changes made to refine online instruction in the second year resulted in improved perceptions of teacher presence and higher reported rates of student satisfaction on faculty evaluations.

Establishing Teaching Presence Through Communication and Feedback

Teaching presence is established through frequent, positive communication with learners (Akcaoglu & Akcaoglu, 2022; Borup et al., 2014; Gacs et al., 2020; Garrison et al., 2010; Jackson, 2017; Mullen, 2020a, 2021). Consistent communication practices through course messaging, discussion boards, and synchronous instruction can foster presence in the online classroom (Rothstein & Haar, 2020). A mixed-methods study comparing online and F2F versions of advanced university-level Spanish courses found that students performed at comparable levels in both environments and that responsive communication practices and weekly web-conferencing contributed to student satisfaction (Enkin & Mejías-Bikandi, 2015). Rothstein and Haar (2020) noted that the quality of instructor communication and how instructors related to students from a variety of backgrounds increased overall student satisfaction with higher education online courses.

Timely and corrective feedback is an instructional practice that guides student learning in the virtual environment (Barbour et al., 2018; Gacs et al., 2020; Hosler & Arend, 2012; Rothstein

& Haar, 2020; Russell, 2020; Sanders & Lokey-Vega, 2020). Gacs et al. (2020) proposed integrating built-in feedback into automated language assessments, although they acknowledged that it can be challenging to account for all possibilities of student expression in this format. The authors suggested incorporating a variety of assessments into courses, including those that provide an opportunity for personalized instructor feedback (Gacs et al., 2020). Ketchum et al. (2022) reported mixed results with instructors' experiences using video feedback in online courses. While some instructors felt that video feedback was transactional and unnecessarily time-consuming, others enjoyed the potential for increasing social presence with students. Russell (2020) and Payne (2020) shared that explicit feedback, which points out multiple errors in written or oral communication, can discourage students from participating in communicative activities. On the other hand, specific and encouraging feedback on student work can establish teaching presence and support critical thinking (Hosler & Arend, 2012; Mullen, 2020a, 2021).

Online Class Size and Student Achievement Outcomes

Class size is an important consideration for online leaders in determining program models and staffing (Zhang et al., 2018). At the organizational leadership level, Zhang et al. (2018) shared that class size decisions appear to be influenced by contextual factors such as (a) overall teaching load and experience, (b) student learning performance, (c) opportunities for interaction, and (d) course content. Approaches to establishing guidelines for online class size appear to align with F2F policies in some areas. The *VEV* document reiterated the expectation for all divisions to comply with the Standards of Quality requirements outlined in the Code of Virginia for teacher ratios and class size—regardless of modality (VDOE, 2021). Similarly, Barbour and LaBonte (2019) reported that online class size in Ontario, Canada, generally follows maximum classroom limits. On the other hand, Molnar et al. (2019) with the National Education Policy Center shared

that teaching loads at private virtual schools through K12, Inc. ranged from 60–72 students per teacher at the elementary level and 225–275 students per teacher at the high school level. The authors suggested that high teaching loads contribute to a lack of direct student contact with their online teachers. Zhang et al. (2018) called for further research grounded in theoretical frameworks, such as the CoI and ACE, to examine class size in K–12 settings and make recommendations for policymakers and leaders.

Lin et al. (2019) studied the effect of self-paced asynchronous class sizes on learning outcomes, as measured by the final course grade, with a sample of 12,032 high school students. A quantitative regression analysis revealed that the maximum class size supporting optimal achievement varied widely across content areas (Lin et al., 2019). The results showed a statistically significant relationship between the variables, with the following maximum threshold for class size to support student achievement: 38 in math ($p < .006$), 35 in science ($p < .05$), and 42 in social science ($p < .001$). Student outcomes were highest for world languages classes of 15, although the result was not significant ($p = .57$), and there was no significant relationship between increasing class size and final course outcomes in English ($p = .288$) (Lin et al., 2019). Exceptionally small classes appeared to negatively affect learning outcomes, potentially due to limited interaction with students and instructors (Lin et al., 2019; Zhang et al., 2018). Although Lin et al.'s (2019) research suggested that large online classes may support positive student outcomes in some content areas, the authors cautioned against using the findings in a prescriptive manner to determine policy for class sizes.

Social Presence and Community

Online leaders develop organizational policies for faculty and student interaction that encourage digital citizenship and build community (VDOE, 2021). Leaders also make decisions

about the communication tools and infrastructure that support learning within the LMS (Garza Mitchell, 2009; McLeod & Richardson, 2018). This section of the review explores the concept of community in the online environment through the lens of social presence. Definitions of social presence and community according to the CoI and ACE frameworks are first presented.

Garrison et al. (2000) initially defined social presence as the ability of course participants “to project themselves socially and emotionally” (p. 94). After a decade of continued research and reflection, Garrison et al. (2010) suggested that social presence involves “identifying with the community, communicating purposefully in a trusting environment, and developing interpersonal relationships” (p. 7). Akcaoglu and Akcaoglu (2022) shared that “social presence includes affective expression, open communication, and group cohesion” (p. 88). Student engagement in the online environment increases when instructors build community among learners, thus intentionally creating opportunities to cultivate social presence within the course (Akcaoglu & Akcaoglu, 2022; Garrison et al., 2000, 2010).

In the ACE framework, Borup et al. (2020) expanded on the concept of *community* by proposing that both personal and course communities may support students. The personal community consists of the student’s family, friends, and anyone else in their social circle. A student’s course community consists of the teachers, administrators, and peers associated with the program or course in which they are enrolled. Participants in these two communities, referred to as *actors*, influence the elements that support a student’s affective, behavioral, and cognitive engagement (Borup et al., 2020; Tuiloma et al., 2022). In this model, student autonomy is reinforced by both communities, which can help learners stay engaged and accomplish desired academic outcomes.

Considerations for Building Community

Building community through both asynchronous and synchronous instruction, although challenging, is essential for student engagement (Anderson-Mejías, 2018; Bigatel & Edel-Malizia, 2018; Borup et al., 2014, 2020; Enkin & Mejías-Bikandi, 2015; González-Lloret, 2020; Hammond, 2017; Rothstein & Haar, 2020). Wenger et al. (2009) proposed the concept of *digital habitats*, or how individuals in an online community experience the concept of a shared place. From a leadership perspective, building community in a digital habitat involves establishing a technological configuration to coordinate participation, facilitate sharing, and manage work tasks. The NSQ (2019) recognized the role that community plays in an online learner's experience through the creation of Standard C: Community Building, a category with five distinct strands: (1) integrating tools that promote peer collaboration, (2) modeling and reinforcing expectations for appropriate student interaction, (3) facilitating opportunities for active learning, (4) learning activities in groups that promote higher-order thinking, and (5) accounting for culturally diverse learner needs and perspectives. This definition of building community extends beyond providing opportunities for students to interact with the teacher and one another (NSQ, 2019).

Kumi-Yeboah et al.'s (2018) qualitative study using semistructured interviews with 40 African American and Hispanic minority high school students explored the factors that promoted or hindered their learning. The authors shared that online learning for minority students is enhanced by collaborative activities, increased access to learning materials online, parental support, open communication with teachers, and interactions with other students. Participants reported that a positive online environment with fewer distractions contributed to fewer behavioral issues than when learning in traditional classrooms. Conversely, the authors found that a "lack of social presence and lack of cultural inclusion in course content constrain the online learning experiences and academic self-concept of minority students enrolled in online school"

(Kumi-Yeboah et al., 2018, p. 8). This finding underscores the need for teachers to foster an inclusive course community for students from different backgrounds (Kumi-Yeboah et al., 2018; NSQ, 2019; Rothstein & Haar, 2020).

Building Community Through Synchronous Instruction

Technology tools for students to interact with one another are an integral component of building community in online language courses, but the implementation of such tools must be intentionally layered within a well-planned curriculum (Gacs et al., 2020; González-Lloret, 2020). Acknowledging student contributions during synchronous instruction can build rapport with students and increase participation (Payne, 2020). Rothstein and Haar (2020) shared that the somewhat-common practice of students choosing not to use their cameras during synchronous instruction can negatively impact community building by reducing the visual cues used in interpersonal communication. They suggested that it can be beneficial for instructors to encourage student participation using their cameras (Rothstein & Haar, 2020). In a study of a culturally responsive online K–12 science, technology, engineering, and math (STEM) camp with extensive synchronous meetings, researchers found that not using cameras regularly was a barrier for teachers in getting to know students (Solyst et al., 2022). However, limited camera usage was attributed to creating a more equitable learning environment for students from low socioeconomic backgrounds, for whom cameras may have made them feel vulnerable. In this setting, instructors showed flexibility with cameras according to learner preferences.

In a quantitative comparative study involving graduate residents, Weber and Ahn (2021) noted that the transition from in-person to online conferences during the pandemic had a negative impact on participant engagement and attention during weekly residency conferences. Residents reported increased multitasking during online conferences, which distracted learners from the task

at hand and caused them to miss valuable information. To ameliorate distractions and better engage residents during the sessions, the authors recommended incorporating techniques to support active learning, such as polling, using the chat, and implementing breakout rooms (Weber & Ahn, 2021). Rothstein and Haar (2020) also suggested the use of breakout rooms to strengthen connections between small groups of students during synchronous instruction.

Isolation and Communities of Support

A commonly cited concern in online learning is the potential for student isolation (Bigatel & Edel-Malizia, 2018; Jackson, 2017; Kumi-Yeboah et al., 2018; Tate & Warschauer, 2022; Wasfy et al., 2021). Borup and Archambault (2022) cautioned that in some online schools, students may work independently and asynchronously, graduating from secondary school without ever having worked collaboratively with other learners. Isolation is a leading factor in attrition from online courses or programs (Barbour, 2018; Borup et al., 2014, 2020; Goertler & Gacs, 2018; Russell, 2020; Saultz & Fusarelli, 2017), and program retention is a leadership concern (Hoey & McCracken, 2021). Additional causes for student attrition include confusion with the course technology (Barbour et al., 2018; Goertler & Gacs, 2018) and anxiety with learning through an online platform (Goertler & Gacs, 2018; Rothstein & Haar, 2020; Russell, 2020).

Borup et al. (2020) suggested that a lack of affective engagement due to isolation, not enjoying the content, or not relating to the teacher can impact academic engagement. Tuiloma et al. (2022) proposed that establishing social and teaching presence does not adequately foster the relationships needed to sustain affective engagement. The authors shared that small-group instruction can be an effective means of cultivating this connection and helping students feel invested in the course community.

An additional consideration is facilitation that helps students manage their online learning behaviors. Teachers may use LMS tools to inform needs for instructional interventions (Barbour, 2018; Borup et al., 2020). Analyzing behavioral analytics, such as login patterns, completion rates for assignments, and course interactions, can offer an overall picture of student engagement (Barbour, 2018; Borup et al., 2020). Online students benefit when school- and home-based facilitators receive training on LMSs, instructional tools, strategies, and expectations that enable them to better monitor and support learning (Borup & Stimson, 2019). Helpful facilitator behaviors include advising and motivating, reminding students of deadlines, explaining assignment instructions, and contacting teachers about student progress (Borup & Stimson, 2019; Kumi-Yeboah et al., 2018). In a qualitative grounded theory analysis of successful online elementary-level instruction, Liao et al. (2021) proposed that teachers' consistent communication practices with families was instrumental in helping younger students participate in the class community.

Cognitive Presence and Course Design

Online leaders manage the curriculum, assessments, and learning tools implemented in the virtual environment (Hoey & McCracken, 2021; McLeod & Richardson, 2018; Wasfy et al., 2021). At the K–12 level, leaders are tasked with ensuring that courses align to applicable state standards and that learning is appropriately evaluated each year (Rice & Skelcher, 2018). The final section of this review examines how the literature addresses cognitive presence as it relates to online course design. Definitions of cognitive presence and cognitive engagement according to the CoI and ACE frameworks provide a foundation for analysis of the literature.

Garrison et al. (2000, 2010) defined cognitive presence as the ability of participants to “construct meaning through sustained communication” (p. 89). The authors explained that the

practical inquiry model to initiate cognitive presence involves four steps: a triggering event, exploration, integration, and resolution. Moreover, they acknowledged the role that teachers often play in helping students move from the inquiry and exploration stages to situating and applying their new knowledge (Garrison et al., 2010).

Borup et al. (2020) defined *cognitive engagement* as the internal processes that lead to student knowledge and understanding. They suggested that cognitive engagement aligns with instruction and collaboration. In this model, instruction may be delivered synchronously or asynchronously by the teacher or other knowledgeable students in the course. Students may exhibit cognitive engagement when collaborating with peers “to co-construct knowledge that neither had previously or to develop a product they could not have created individually” (p. 819). Miller et al. (2020) cautioned against overgeneralizing the benefits of collaboration given that students learn from working with others who are more capable than themselves.

Online Course Design

Researchers recommend considering standards of quality, such as Quality Matters or other frameworks that encourage overall quality in course design practices (Baldwin et al., 2018; Barbour et al., 2018; Bigatel & Edel-Malizia, 2018; Gacs et al., 2020). The NSQ (2019) recognized the role that planned course design plays in an online learner’s experience in Standard H: Instructional Design, a category with six distinct standards. Since the teacher may not be the course designer in some virtual models, Standard H may be considered optional in some programs. Research-based practices in course design are more fully articulated in the National Standards for Quality Online Courses—revised in 2019—which mirror the Quality Matters standards for K–12 course design. Baldwin et al. (2018) reviewed six publicly available national and statewide course development standard sets at the higher education level with the goal of

identifying best practices in course design. The authors proposed essential standards with recommendations to (a) communicate course policies and objectives, (b) provide for an intuitive layout and navigation, (c) integrate technology that promotes engagement, (d) incorporate activities that facilitate community building, (e) account for student accommodations, (f) align assessments to learning objectives, and (g) communicate assessment processes.

Tools and Modality. Barbour et al. (2018) recommended that K–12 online educators consider all course instructional tools during the design process with the end goal of better engaging students. González-Lloret (2020) suggested that “a combination of synchronous and asynchronous work may be the key to find balance and keep learners cognitively engaged in the task” (p. 267). Mullen’s (2020a) qualitative case study of master’s students at a Virginia university found that adult learning was equally strong for F2F and online cohorts, and that cognitive orientation as evidenced by the ideas expressed through student writing was not compromised across modalities: “The meaningful outcome for this comparative study of online and F2F learning, then, is that the distance group’s academic performance was not inferior to that of its conventional counterpart based on the measures” (p. 683). A unique consideration for this higher education study was the intentional focus on synchronous course design, rather than asynchronous or a combination design approach, and the author recommended further empirical research into how synchronous instruction facilitates the CoI presences (Mullen, 2020a).

Universal Design for Learning and Accessibility

Course design that considers the Universal Design for Learning (UDL) principles, accessibility, and assistive technologies can support students with disabilities (Borup & Archambault, 2019; Gacs et al., 2020; Kelly & Zakrajsek, 2021; Martin et al., 2019; Repetto et al., 2018; Stella & Corry, 2017). Instructional design that focuses on UDL principles and usability

is proactive in accommodating the needs of all potential learners in a course (Repetto et al., 2018). The national standards have recognized the role of the online teacher in accounting for student accommodations in both course design and instruction (iNACOL, 2011; NSQ, 2019). Teachers and course designers may implement visual and auditory supports, such as closed captioning, transcripts, screen readers, and other applications, to accommodate a variety of learning needs in the online classroom (Borup et al., 2014; Gacs et al., 2020). Options to personalize learning according to student needs using a variety of assistive technologies can highlight learner strengths rather than learning differences (Stella & Corry, 2017). Using a capability approach to synthesize multiple studies about K–12 students with disabilities taking online courses, Stella and Corry (2017) found that parents and students reported initial responses of satisfaction with online education. Since the study was limited to families participating in online learning and did not include participants whose students dropped out of programs, the authors noted that additional research is needed to assess the implications of the online modality within this population.

Collaboration in the Online Environment

Opportunities for learner–learner collaboration as part of a thoughtfully planned course design support cognitive and social presence (Barbour, 2018; Bigatel & Edel-Malizia, 2018; Gacs et al., 2020; Hammond, 2017). Hammond (2017) found that collaboration is essential to the learning process and that the effort of the learner to explain, situate, and defend a position generates knowledge. Collaborative tasks, such as group projects, group problem-solving, paired discussions, and peer review, also contribute to a sense of community and prevent student isolation in online courses (Hammond, 2017; Jackson, 2017). González-Lloret (2020) proposed that collaborative learning tasks serve a dual purpose in the online language classroom: “On one side, they promote language interaction among learners and maximum engagement with the task,

and on the other, they have the important function of building a community of learning” (p. 262). Student communication with one’s teacher and peers helps reinforce the sense of connection to a wider learning community and plays a central role in connecting with the content (Lokey-Vega et al., 2018). Collaboration through synchronous and asynchronous tools contributes to student engagement and positive perceptions of performance (Barbour, 2018; Payne, 2020).

Russell (2020) shared that one barrier to interpersonal communication and collaboration for online language students is related to “foreign language classroom anxiety” (p. 338). When a language learner’s affective filter is raised due to anxiety or stress, this can lead to a block in the linguistic input and impede learning (Russell, 2020). Among several strategies presented to assist students with language anxiety, Russell recommended incorporating relaxation exercises, sharing encouraging messages, increasing paired formative practice, and creating peer support groups within the course. Payne (2020) suggested that incorporating asynchronous written discussions followed by synchronous oral discussions in a web-conferencing environment helped language students situate their learning and elevated the overall quality of the communication output. Promoting collaborative tasks in online learning contributes to productive language output in speaking and writing and may motivate students to improve their performance skills (Gacs et al., 2020; González-Lloret, 2020).

Facilitating Cognitive Presence Through Design and Delivery

Teachers guide learning through an intentional course design that facilitates opportunities to interact with the content and the class community (Borup et al., 2020; Garrison et al., 2010). A quantitative correlational study on meaningful interactions in K–12 online world languages courses found that teacher–learner and learner–content interactions contributed to student perceptions of progress and overall satisfaction (Lin et al., 2017). Language students participate

more meaningfully in synchronous instruction when the learning activities have been planned to account for the increased cognitive load of the tasks (Payne, 2020; Russell, 2020). Appropriately scaffolding learning activities in course design builds student confidence and establishes a routine for learners (Payne, 2020; Russell, 2020). A predictable, established learning routine can be particularly beneficial for adolescent learners (Borup et al., 2020).

Carrillo and Flores (2020) suggested that a student's interaction in course activities influences teaching and cognitive presence. Cognitive presence seems to depend on opportunities for social presence and a teacher guiding the experience from content reflection to critical reflection (Carrillo & Flores, 2020; Garrison et al., 2010). In a quantitative analysis of variance (ANOVA) study involving students completing a dental hygiene program, synchronous discussions in which students participated on camera facilitated higher levels of cognitive presence while requiring a less-intensive workload on instructors than with the same discussions conducted asynchronously (Molnar & Kearney, 2017). Although the study involved a small sample size ($N = 15$), the authors found that instructor-led synchronous discussions helped establish cognitive presence more effectively than did asynchronous discussions; this suggests an interdependence between teaching and cognitive presences (Molnar & Kearney, 2017). Implementing appropriate online teaching methods is a vital component for supporting cognitive engagement in the online environment (Tuiloma et al., 2022).

Miller et al.'s (2020) quantitative ANOVA study of graduate and undergraduate students in Canadian universities explored the relationship among each of the three CoI presences in asynchronous courses. Using an adapted CoI survey instrument, the authors did not find any significant differences among participant disciplines, technological experience, and LMS with regard to online learning as measured by the CoI presences. However, the data revealed a

statistically significant difference between graduate and undergraduate student experiences as related to the CoI presences, suggesting that graduate students may be more independent learners and better suited for learning online than are undergraduates (Miller et al., 2020). The authors indicated that undergraduate students may not have the social community supports needed to cope with the stress of learning online. Based on a review of empirical studies involving factor analysis, Miller et al. (2020) proposed a restructured hierarchy for the CoI presences, where teaching presence acts as a foundation for learning and fosters social presence; collectively, they create opportunities for cognitive presence.

Summary

Chapter 2 provided a comprehensive review of recent literature about online leadership, equity, teaching, community, and course design. The literature regarding online teaching, community, and course design was considered through the lens of the CoI and ACE frameworks. Facilitating teaching, social, and cognitive presence and building community are important considerations for student engagement and learning in the online environment. These themes are central to the research on leaders' experiences with developing a culturally inclusive community and an equitable learning environment for students. Chapter 3 presents the research methodology, data collection, and data analysis procedures utilized for this study.

Chapter 3: Methodology

Introduction

This chapter presents the purpose of the study and examines the research design that was utilized. The design process includes the research questions, limitations and boundaries of the case, setting, and participant sample. Data were collected through a demographic survey as well as one-on-one and focus group interviews using questions informed by research from the literature review. The interview protocol and validation methods are presented. This chapter expands upon the qualitative data analysis procedures implemented through deductive and inductive coding, the identification of themes, and the development of visual data representations. Information regarding confidentiality and the ethical treatment of data is also offered.

Purpose and Research Questions

The purpose of this qualitative study was to investigate leaders' experiences with developing a culturally inclusive community and equitable learning environment in six state-level supplemental virtual programs. Two research questions guided the study:

1. How do leaders in state-level supplemental virtual programs describe their experiences with developing a culturally inclusive community:
 - a. At the program level for faculty and staff?
 - b. At the program and course levels for students?
2. How can instructional and course design practices address barriers to virtual learning in order to facilitate an equitable learning environment for students of diverse backgrounds?

Researcher's Professional Background and Assumptions

My interest in this topic stems from my work as a teacher, course writer, and program leader with a state virtual program. I began my career as a teacher of Spanish and English for speakers of other languages in a public school division in central Virginia. Following seven years in the classroom, I transitioned to working online. My personal and professional goals included approximating the dynamic of F2F instruction in the virtual environment and facilitating meaningful student communication using available technology. After teaching Spanish online for 10 years, I served as an instructional supervisor before moving into my current position as a director overseeing K–12 instruction and curriculum development. Through my work in various roles, I gained foundational knowledge about online pedagogy, instructional design, and national standards of quality. I also observed how teachers' encouragement of and connection with students in the online environment had a beneficial effect on their participation and overall success.

As a practitioner, I believe that learning through planned online courses implemented by trained teachers works well for some students. I feel that leaders influence the conditions under which online learning may work well. As a researcher, I assume that leadership practices that encourage the development of presence (as defined by the CoI) and build community may improve student engagement and lead to successful outcomes. Given that the research was strongly connected to my work as a supplemental online program leader, I continually monitored my assumptions during the research process by implementing several procedures: member checking with interviewees, an independent audit of sample data sets, reflexivity, and peer debriefing with a scholar in the field of K–12 learning. These procedures are described in more detail later in this chapter in the section titled *Instrument Design and Validation*.

Interpretive Research Framework

This research was designed from a social constructivist worldview, and the focus of the study was on the experiences of leaders with community and an equitable learning environment in supplemental virtual program settings. Creswell and Poth (2018) noted that the social constructivist paradigm allows the researcher to explore the richness and complexity of individuals' lived experiences:

In social constructivism, individuals seek understanding of the world in which they live and work. They develop subjective meanings of their experiences—meanings directed toward certain objects or things. These meanings are varied and multiple, leading the researcher to look for the complexity of views, rather than narrow the meanings into a few categories or ideas. The goal of research, then, is to rely as much as possible on the participants' views of the situation. (p. 24)

A social constructivist approach to inquiry strives to define reality through an epistemological perspective to accurately interpret and reflect participants' voices (Lincoln & Guba, 2013).

Through one-on-one and focus group interviews, the researcher sought to identify commonalities and differences among leaders' experiences with developing community and an equitable learning environment through course design and instructional practices.

Interview protocols included open-ended questions to investigate leaders' perspectives on their work with faculty, students, and schools. Open-ended questioning allows the participants to construct meaning during the interview and offer responses tied to their experiences (Creswell, 2014; Creswell & Poth, 2018). Follow-up questions were tailored to information participants shared during the interviews. Focusing on specific contexts in which the leaders work allowed for a deeper understanding of the social, historical, and cultural influences shaping participating

leaders' views (Creswell, 2014; Creswell & Poth, 2018). An inductive method of emergent ideas was used to draw conclusions from interview data (Creswell & Poth, 2018).

Limitations and Delimitations

Limitations are features of a study that affect the ability to generalize the findings to other settings (Roberts & Hyatt, 2018). This study included leaders from six state-level supplemental online programs in the United States. With 23 state-level supplemental programs in the United States (Watson, 2022), the research draws from a limited population of programs and virtual leaders. This research did not include full-time cyber schools or school district virtual academies that function as full-time schools. The research focused exclusively on leaders' experiences with developing a culturally inclusive community and equitable learning environment. This research did not examine the experiences of faculty or other stakeholders such as students, parents, or school-based facilitators. As the findings of this research pertain to state-level supplemental virtual programs, the ability to generalize to other settings or populations may be limited.

Research Boundaries

Bounding sets the parameters for a case (Creswell & Poth, 2018; Stake, 1995; Thomas, 2021; Yin, 2018). Cases can be bounded by time and place, and they function as a system of interrelated parts (Creswell & Poth, 2018; Stake, 1995). Yin (2018) shared that bounding cases establishes the scope of the data collection and distinguishes the phenomenon (e.g., leadership experiences with developing community and an equitable learning environment) from the context (e.g., state-level supplemental virtual programs). This research focused on the experiences of 21 leaders from six programs as shared in one-on-one and focus group interviews. The interviewees were bound by their leadership role and minimum years of experience working

in a virtual setting. The programs in this study were bound by the school model (state-level supplemental virtual program), approach to curriculum development, and instructional modality.

Selecting cases that offer diverse perspectives is a preferred approach (Creswell & Poth, 2018), and this study investigated the experiences of leaders from different geographic settings. While there are many models of schools that provide online learning in the United States, this study was limited to state-level supplemental virtual programs. There is a considerable range in program sizes among state-level virtual programs (Watson, 2022), which influenced the organizational structure and leadership model for each program in this study. Programs of different sizes were included in this study so that various leadership experiences could be represented and compared. Approaching the research of six programs as a single case afforded a deeper understanding of leadership within this model.

The research included programs that primarily develop and adapt their own online course content. Program staffing models included both part-time and full-time faculty, and they varied in their ratio of adjunct to full-time teachers. Participants were purposefully selected and included executive leaders, directors of instruction, curriculum and design leaders, instructional designers, and other program area leaders connected with teaching and learning. Study interviewees had at least 3 years of experience working in a virtual setting. The research included programs with various instructional models for incorporating synchronous and asynchronous modalities, but all participating programs offered both modalities.

Research Design

The research design was a qualitative case study with leaders from six state-level supplemental virtual programs. A qualitative approach was chosen to investigate the problem of developing an equitable and engaging learning environment for students. Qualitative research is

an appropriate choice for exploring a complex issue when the goal is to learn about a population by talking directly with participants and hearing their stories (Creswell & Poth, 2018).

Case analysis has been defined as the study of persons, events, projects, programs, institutions, or policies that are bounded, or defined by specific parameters set by the researcher (Creswell & Poth, 2018; Stake, 1995; Thomas, 2021; Yin, 2018). This study was bounded by leaders' roles, years of experience, the school model, and the program's approach to curriculum development. Case analysis can offer detailed data leading to a comprehensive understanding of what is being investigated. This approach affords the flexibility to examine data from a variety of participants (Creswell & Poth, 2018; Yin, 2018), and it provides the thick description required to be able to understand and appreciate a setting and the elements that characterize it (Lincoln & Guba, 2013).

Primary sources of data were a demographic survey of participants and semistructured one-on-one and focus group interviews with leaders. Approval from the Human Research Protection Program through the Virginia Polytechnic Institute and State University Institutional Review Board (IRB) was obtained prior to recruitment or data collection procedures (Appendix F), including CITI Training on Social and Behavioral Research (Appendix G).

Setting and Participants

This study focused on leaders from six state-level supplemental virtual programs in the United States. According to the 2022 DLC report, state virtual programs are created by state agencies or through legislation and receive funding through state appropriations, program course fees, or grants (Watson, 2022). State virtual programs may be directed by (a) state education agencies, (b) separate nonprofit organizations, (c) charter schools, (d) higher education institutions, or (e) a separate government body, administered by a board of directors. State-level

virtual programs seek to support equitable access to course options for public school students, regardless of their geographic location (Rice & Skelcher, 2018). All state virtual programs in the United States served students in grades 6–12, but only five schools also provided instruction for elementary students during the 2019–2020 academic year (Watson, 2022).

As measured in 2019–2020 prior to the COVID-19 pandemic, most state-level programs worked with between 25,000 and 35,000 semester-equivalency enrollments (Watson, 2022). Table 3 presents basic information for the participating programs according to their size and type of faculty. Programs were categorized according to their enrollment size: a small program with fewer than 10,000 semester-equivalency enrollments, three medium programs with between 10,000 and 50,000 semester-equivalency enrollments, and two large programs with more than 50,000 semester-equivalency enrollments. Data for these program enrollments were obtained from the DLC state profile reports (DLC, n.d.). Programs A, B, D, and F hired both full-time and part-time faculty, whereas programs C and E hired only part-time faculty.

Table 3

Program Sizes Measured in Semester-Equivalency Enrollments and Faculty Status

Program	Program size	Faculty status
A	Medium (10,000–50,000)	Both full-time and part-time
B	Medium (10,000–50,000)	Both full-time and part-time, mostly part-time
C	Small (fewer than 10,000)	Only part-time
D	Large (more than 50,000)	Both full-time and part-time, mostly part-time
E	Large (more than 50,000)	Only part-time
F	Medium (10,000–50,000)	Both full-time and part-time

Participant Sample

This research investigated leaders' experiences in six state-level supplemental programs in the United States. A qualitative case analysis approach involved 22 leaders from six state-level supplemental virtual programs in the United States. Data sources included a demographic survey

and semistructured interviews. An online survey was used to collect demographic data from 22 program leaders, of whom 21 leaders of various backgrounds and years of experience were purposefully selected for interviews. Purposeful sampling allows the researcher to intentionally select a group of people who can best provide information about the research problem (Creswell & Poth, 2018). Leaders who were selected for interviews had at least 3 years of experience working in a virtual setting. Participants included executive leaders, directors of instruction, curriculum and design leaders, instructional designers, and other program leaders in roles supporting teaching and learning.

A total of 15 leaders participated in one-on-one interviews, and six leaders participated in focus groups. This resulted in a 68% response rate based on overall recruitment messages sent to 31 leaders. Executive leaders and directors were invited to participate in one-on-one interviews, whereas curriculum and design leaders, instructional designers, and other program leaders were invited to participate in focus groups. An instructional designer who was unable to participate in a focus group due to scheduling conflicts completed a one-on-one interview. One-on-one interviews took place with four executive leaders, seven directors of instruction, two curriculum and design leaders, an instructional designer, and a program leader of professional learning. Two focus groups were held to accommodate schedules in different time zones for two curriculum and design leaders, three program leaders who support teaching and learning, and an instructional designer.

At the conclusion of the one-on-one and focus group interviews with 21 participants, the research had reached a saturation point with little new emerging data. Thus, additional invitations were not sent to other leaders in the population.

Instrument Design and Validation

The process of designing and implementing a research instrument involves several planning steps (Creswell & Poth, 2018). Table 4 details the interview and instrument design procedures implemented in the research, which were aligned to Creswell and Poth (2018).

Table 4*Interview Procedures Aligned to Creswell and Poth (2018)*

Creswell and Poth (2018)	Proposed study
1. Create open-ended research questions focused on the phenomenon.	Open-ended research questions were designed to address the experiences of leaders with developing a culturally inclusive community and equitable learning environment in state-level supplemental virtual programs.
2. Identify participants through purposeful sampling who are best suited to answer the research questions.	Participants were purposefully selected from state-level supplemental virtual programs using program directors' recommendations and a demographic survey. Participants included program directors, directors of instruction, curriculum and design leaders, leaders supporting teaching and learning, and instructional designers with at least 3 years of experience in virtual school.
3. Determine the type of interviews to be conducted based on practicalities and the anticipated interactions between participants and the researcher.	Semistructured, 45-minute, one-on-one interviews were conducted with directors, directors of instruction, and curriculum and design leaders. Semistructured, 45-minute focus groups were conducted with curriculum leaders, program area leaders, and instructional designers.
4. Implement adequate recording procedures to collect data when conducting interviews.	One-on-one and focus group interviews were conducted, audio-recorded, and transcribed using the Zoom videoconferencing platform. Handwritten notes were recorded by the interviewer during each of the interviews.
5. Create and implement an interview protocol with five to seven open-ended questions.	Interview protocols for one-on-one and focus group interviews are found in Tables 4 and 5.
6. Practice the questions and procedures to refine the instrument.	The interview protocol and questions were practiced with a virtual school leader who was not connected to the study. Feedback was used to refine the interview questions and procedures.
7. Identify an interview location free of distractions for interview participants and the researcher.	Due to the geographic separation of the researcher and participants, all interviews were held via the Zoom videoconferencing platform. The interviewer and participants selected a location free of distractions for the interview.
8. Obtain consent to participate in the interview using the institution's approved form.	All participants indicated their consent to participate in the interview using the consent form found in Appendix C.
9. Follow the interview procedures established in the protocol.	The interviewer followed the time boundaries established for each interview (45 minutes), observed interview protocol, listened intently, asked follow-up questions, and summarized responses to confirm meaning.
10. Establish transcription logistics.	The interview was transcribed using the Zoom videoconferencing platform. The interviewer reviewed transcript data, corrected any errors, and verified the accuracy of transcript data with participants in one-on-one interviews.

Semistructured Interview Protocol

Consistent interview protocols were implemented for all one-on-one and focus group interviews. The videoconferencing platform Zoom was used for all interviews, which took place

in a distraction-free location of each participant's choice. The researcher reviewed interview protocol, including the ability of participants to (a) discontinue the interview at any time or for any reason, (b) not answer any questions that may make them uncomfortable, and (c) verify the accuracy of interview transcript through member checking prior to data analysis. The interviews were audio-recorded to generate transcriptions.

Miles et al. (2020) shared that open-ended questioning facilitates co-authoring during the interview through the mutual process of sharing, summarizing, and interpreting meaning. Open-ended questions to the interviewees were utilized along with follow-up questions aimed at gathering additional details and confirming the meaning of participants' shared experiences and practices. This cycle of questions continued throughout the interview process. Probing questions were used as needed to help participants expand on their responses. The interview structure was intentionally flexible to allow for unscripted follow-up questions tailored to individual responses. This approach afforded the gathering of a wide range of data about leadership experiences across different programs and participant roles. The same interview protocols were used for one-on-one and focus group interviews as shown in Tables 5 and 6, but the follow-up questions differed according to the participants' areas of experience and responses provided. Sources that informed the interview questions are presented in the protocol along with alignment to the research questions.

Table 5*Questions for One-on-One Interviews*

Question number	Interview protocol question	Sources	Research question(s)
Q1	Please describe your course design model.	Barbour et al., 2018; Bigatel & Edel-Malizia, 2018; Garza Mitchell, 2009; McLeod & Richardson, 2018; Oliver et al., 2010; Wasfy et al., 2021	R2
Q2	What are some barriers to equity in course design for students in the communities and schools you serve?	Kelly & Zakrajsek, 2021; Kumi-Yeboah et al., 2018; Tate & Warschauer, 2022	R2
Q3	In your experience, what course design practices engage students of diverse backgrounds and abilities?	Borup & Archambault, 2019; Gacs et al., 2020; Kelly & Zakrajsek, 2021; Martin et al., 2019; Stella & Corry, 2017; Tate & Warschauer, 2022	R1 and R2
Q4	Please describe your instructional model.	Barbour et al., 2018; Borup, 2018; Borup et al., 2014, 2020; Jackson, 2017; Lin et al., 2017; McLeod & Richardson, 2018	R2
Q5	What are some barriers to equity in instruction for students in the communities and schools you serve?	Anthony & Miller, 2022; Ball, 2022; Borup, 2020; Borup et al., 2020; Kelly & Zakrajsek, 2021; Tate & Warschauer, 2022	R2
Q6	In your experience, what instructional practices do teachers use to engage students of diverse backgrounds and abilities?	Barbour et al., 2018; Borup, 2018; Borup et al., 2014, 2020; Jackson, 2017; Lin et al., 2017; McLeod & Richardson, 2018	R1 and R2
Q7	Please describe the online learning community at {program name}.	Borup et al., 2020; Carillo & Flores, 2020; Garrison et al., 2010; Hammond, 2017; Jackson, 2017; Kumi-Yeboah et al., 2018; Mullen, 2020a, 2021; Rothstein & Haar, 2020; Tuiloma et al., 2022; Wenger et al., 2009	R1
Q8	What are some ways that leaders, faculty, and staff in your program develop community?	Borup et al., 2020; Carillo & Flores, 2020; Garrison et al., 2010; Hammond, 2017; Jackson, 2017; Kumi-Yeboah et al., 2018; Mullen, 2020a, 2021; Rothstein & Haar, 2020; Tuiloma et al., 2022; Wenger et al., 2009	R1
Q9	What are some benefits and challenges to developing a culturally inclusive community for students in the online environment?	Kumi-Yeboah et al., 2018; Mullen, 2020b; Solyst et al., 2022; Tate & Warschauer, 2022	R1
Q10	Is there anything else that you can tell me that would add to this study?	Not applicable	R1 and R2

Table 6*Questions for Focus Group Interviews*

Question number	Interview protocol question	Sources	Research question(s)
Q1	Please describe your course design model.	Barbour et al., 2018; Bigatel & Edel-Malizia, 2018; Garza Mitchell, 2009; McLeod & Richardson, 2018; Oliver et al., 2010; Wasfy et al., 2021	R2
Q2	What are some barriers to equity in course design for students in the communities and schools you serve?	Kelly & Zakrajsek, 2021; Kumi-Yeboah et al., 2018; Tate & Warschauer, 2022	R2
Q3	In your experience, what course design practices engage students of diverse backgrounds and abilities?	Borup & Archambault, 2019; Gacs et al., 2020; Kelly & Zakrajsek, 2021; Martin et al., 2019; Stella & Corry, 2017; Tate & Warschauer, 2022	R1 and R2
Q4	Please describe your instructional model.	Barbour et al., 2018; Borup, 2018; Borup et al., 2014, 2020; Jackson, 2017; Lin et al., 2017; McLeod & Richardson, 2018	R2
Q5	What are some barriers to equity in instruction for students in the communities and schools you serve?	Anthony & Miller, 2022; Ball, 2022; Borup, 2020; Borup et al., 2020; Kelly & Zakrajsek, 2021; Tate & Warschauer, 2022	R2
Q6	In your experience, what instructional practices do teachers use to engage students of diverse backgrounds and abilities?	Barbour et al., 2018; Borup, 2018; Borup et al., 2014, 2020; Jackson, 2017; Lin et al., 2017; McLeod & Richardson, 2018	R1 and R2
Q7	Please describe the online learning community at {program name}.	Borup et al., 2020; Carillo & Flores, 2020; Garrison et al., 2010; Hammond, 2017; Jackson, 2017; Kumi-Yeboah et al., 2018; Mullen, 2020a, 2021; Rothstein & Haar, 2020; Tuiloma et al., 2022; Wenger et al., 2009	R1
Q8	What are some ways that leaders, faculty, and staff in your program develop community?	Borup et al., 2020; Carillo & Flores, 2020; Garrison et al., 2010; Hammond, 2017; Jackson, 2017; Kumi-Yeboah et al., 2018; Mullen, 2020a, 2021; Rothstein & Haar, 2020; Tuiloma et al., 2022; Wenger et al., 2009	R1
Q9	What are some benefits and challenges to developing a culturally inclusive community for students in the online environment?	Kumi-Yeboah et al., 2018; Mullen, 2020b; Solyst et al., 2022; Tate & Warschauer, 2022	R1
Q10	Is there anything else that you can tell me that would add to this study?	Not applicable	R1 and R2

Validation Strategies

Creswell and Poth (2018) identified several strategies for validating qualitative data, including reflexivity, member checking, independent rating through an external audit, and peer debriefing. Each of those strategies was implemented in this research. The researcher worked with the principal investigator, two independent auditors, and a peer debriefer to maintain objectivity and minimize bias during the data collection and analysis processes. The researcher reflected on and disclosed experiences, values, and biases brought to the study. Participants in one-on-one interviews verified transcript data collected to confirm the accuracy of the content through member checking. Two cohort members who are emerging scholars served as independent auditors for the sample data sets. Feedback from the independent auditors was used to refine the assigned codes during data analysis. Finally, an online program leader, who holds a doctorate in instructional design and technology and has no connection to the study, served as a peer debriefer to review the methodology, findings, and implications. Feedback from the peer debriefer served to refine the data analysis and implications.

Recruitment

Recruitment letters requesting consent to participate in the study were sent to executive directors at seven state-level supplemental virtual programs. The letter shared a greeting, the purpose of the study, a request to participate in the study, and a request to communicate with potential participants from the program who fit the leadership criteria. Executive directors from six programs confirmed their willingness to participate in the study. An example of the electronic letter sent is in Appendix B.

Upon securing consent from program leadership, invitations to participate were sent to program-area directors, directors of instruction, curriculum and design leaders, instructional

designers, and other program leaders who support teaching and learning. A list of potential participants and their contact information was derived from each program's website. Leaders were purposefully selected to receive the invitation to participate based on their leadership role in the program. The electronic invitations shared a greeting, the purpose of the study, and a request to participate in a brief demographic survey and an interview. Examples of the electronic letters sent in Appendices D and E. Invitations were sent to 31 leaders from the six programs. Twenty-two leaders agreed to participate, indicating a 71% response rate. A total of 22 participants completed the demographic survey, and 21 leaders were selected for and completed an interview.

Data Collection Procedures

Creswell and Poth (2018) described the data collection and analysis process as a spiral with seven steps: (a) data collection, (b) data organization, (c) reflection on developing ideas, (d) identification and classification of codes into themes, (e) development of interpretations, (f) visualization of the data, and (g) account of the findings to offer conclusions. The first step of this proposed research process involved the preparation of a survey and interview protocol. A demographic survey was used to collect data on leader participants and was used to purposefully select participants for the interviews. Semistructured one-on-one interviews and focus group interviews were used to collect data on leadership experiences with online teaching and course design as reported by virtual program leaders. An interview protocol guided the process and cycle of questions that were utilized during all interviews.

Demographic Survey

An online survey through QuestionPro was used to collect demographic data from the participants. Upon agreeing to participate, the demographic survey was shared to gather data

regarding (a) level of education, (b) race or ethnicity, (c) number of years working in virtual education, (d) current job title, and (e) number of years in their current leadership role. These data were used to purposefully select participants with various backgrounds and experiences for participation in the interviews. The average time to complete the demographic survey was 4 minutes. The demographic survey is shared in Appendix H.

One-on-One and Focus Group Interviews

Interviews are a frequently used source of data collection in qualitative research (Creswell & Poth, 2018; Edwards & Holland, 2013). Qualitative data gathered through interviews offers increased depth and detail to better understand the participants' viewpoints (Edwards & Holland, 2013). Due to the geographic separation between the researcher and consenting participants, all interviews took place via the Zoom videoconferencing platform.

One-on-One Interviews. Fifteen leaders—including executive leaders, directors of instruction, curriculum and design leaders in a director role, and an instructional designer who was unable to participate in a focus group—completed semistructured, 45-minute, one-on-one interviews. These interviews included leaders with experience in planning and decision-making regarding the learning environment, course design, and instructional practices. The semistructured interview format is common in case studies because the researcher has the freedom to ask additional questions to expand on participant responses as needed (Thomas, 2021). Each one-on-one interview offered the opportunity for personalized follow-up questions based on participant responses, which elicited rich descriptions from leaders about their work experiences.

Focus Group Interviews. Six curriculum and design leaders, instructional designers, and other program leaders participated in semistructured, 45-minute focus group interviews. The aim

of focus groups is to facilitate a conversation among participants on a topic selected by the researcher and to uncover the views of each participant (Edwards & Holland, 2013; Thomas, 2021; Yin, 2018). Creswell and Poth (2018) proposed that focus groups are an advantageous choice “when the interaction will yield the best information, when interviewees are similar and cooperative with each other, [and] when time to collect information is limited” (p. 164). Focus groups were implemented with leaders who had experience with course design practices and with supporting students. The focus group interviews utilized the same question protocol as one-on-one interviews, which allowed for focus group participant responses to be analyzed alongside data gathered from one-on-one interviews. In addition to the analysis of individual responses, points of direct agreement among focus group participants that emerged during interviews were noted in the data analysis for findings 2, 3, 4, 6, 8, 9, and 10.

Interview Process. At the start of each interview, the interviewer welcomed the participant(s), shared the purpose of the interview, obtained verbal consent to participate, and confirmed consent to audio-record the interview to generate a transcript. The interviewer reviewed norms for the one-on-one or focus group interviews so that each participant felt comfortable participating as freely and fully as they chose. At the conclusion of each interview, the interviewer asked if there was anything further that the participant(s) would like to share to add to the study (Creswell & Poth, 2018). The interviewer thanked each participant for their time and contribution to the research. A verbal reminder was given to each one-on-one interviewee that they would be contacted to verify the accuracy of the interview transcript. The interview protocol is shared in Appendix I.

One-on-one and focus group interviews were audio-recorded, and transcripts were generated using Zoom. Open-ended interview questions focused on gathering data directly

related to the research questions. The researcher took detailed notes while guiding the interviews. Memoing during the interviews helped capture recurring ideas from the data and thoughts for follow-up questioning. Following each interview, the recorded transcript was reviewed. Transcription errors were corrected by the researcher to ensure that the text transcripts accurately reflected the content of the recorded interviews. Each interviewee who participated in a one-on-one interview verified the accuracy of the transcript to confirm the validity of the information through member checking prior to data analysis. In an interview with an executive director (P4), the transcription tool failed to record all of the interview. Comprehensive handwritten notes made while memoing were compiled and shared with the leader for verification in lieu of a transcript.

Data Analysis

Data from the transcripts were coded, and each participant was identified using a randomly assigned, unique numerical code. All identifiable information was removed and replaced, including participant and program names, states, and cities. Interviewee responses were arranged numerically by interview question into a document for coding using both color-coding and text-based codes. The content was then transferred to a spreadsheet, which was organized by each code. A total of seven spreadsheets were used, with one for each coding category.

The researcher analyzed the frequency and context of the codes in all data sources to identify patterns and themes (Creswell & Poth, 2018). Data interpretation involved developing categories and identifying connections between codes to contextualize the information. Interviewee response data were analyzed from the perspectives of individual participants, their leadership roles, and programs. The final stage of the data analysis process involved creating visual representations through tables and reporting assertions.

Coding of Interviews

Deductive codes were generated using keywords from research questions and from the literature review. In addition to these a priori codes, inductive codes emerged from the interviews (Creswell & Poth, 2018; Miles et al., 2020). A total of 45 codes were identified during the data analysis: there were 16 deductive codes, and open coding was used to identify 29 additional codes. The codes were organized into seven categories: barriers, community, course design practices, instructional practices, leadership practices, program structure, and visibility. Two cohort members who are emerging scholars served as independent auditors for sample data sets. They reviewed the sample coding to verify the accuracy of the assigned codes and their agreement with the researcher's analysis. Feedback from the independent auditors was used to refine the assigned codes during data analysis.

Table 7 displays the coding categories, codes and signifiers, coding type, and mapping to interview questions for the data. Most codes emerged in multiple questions, which suggests that leaders naturally made connections between course design, instructional practices, and community in their responses.

Table 7*Coding Categories, Code Types, and Alignment to Interview Questions*

Category	Code	Signifier	Code type	Mapping to interview questions
Barriers	ACC	Access to program	Open	Q2, Q3, Q4, Q5
	CTY	Community infrastructure, Internet access	Deductive	Q2, Q5
	GEO	Geographic separation	Open	Q2, Q5, Q8, Q9, Q10
	HUM	Human resources	Open	Q2, Q3, Q4, Q5, Q9
	IND	Individual readiness	Deductive	Q2, Q4, Q5
	MIS	Misconceptions	Open	Q5, Q9, Q10
	REP	Representation	Deductive	Q2, Q3, Q5, Q9
	RUR	Rural	Open	Q2
	SCH	School devices	Deductive	Q1, Q2, Q5
	SUP	Student support	Deductive	Q2, Q3, Q4, Q5, Q6
	TIM	Time	Open	Q1, Q2, Q3, Q4, Q5, Q8, Q9
Community	BUI	Building relationships	Deductive	Q4, Q5, Q6, Q7, Q8, Q9
	CCO	Collegial community	Deductive	Q6, Q7, Q8
	COL	Learner collaboration	Deductive	Q6
	ENG	Engagement	Deductive	Q1, Q2, Q3, Q4, Q6, Q9
	F2F	Face-to-face	Open	Q7, Q8
	FAM	Family	Open	Q5, Q8
	FCO	Faculty course community	Open	Q6, Q7, Q8, Q9
	HAR	Hard, leadership challenges	Open	Q7, Q8, Q9
Course design practices	CDE	Course design process	Deductive	Q1, Q3, Q4, Q5, Q8
	COU	Course barriers	Open	Q2, Q4, Q5, Q10
	QMA	Quality Matters	Open	Q1, Q2, Q3
	STA	State standards	Open	Q1, Q2, Q5
	UDL	Universal design for learning	Deductive	Q1, Q2, Q3, Q4, Q5, Q6, Q9
	TRG	Training	Open	Q1, Q2
Instructional practices	COM	Communication	Deductive	Q4, Q5, Q6, Q7, Q8, Q9
	FED	Feedback	Deductive	Q6, Q7, Q8
	PAC	Course pacing	Open	Q1, Q4, Q6
	PER	Personalization of learning	Open	Q3, Q4, Q6
	TUT	Tutoring	Open	Q4, Q5
Leadership practices	CHO	Choice	Open	Q3, Q7, Q8
	INT	Intentional planning	Open	Q7, Q8, Q9
	MDL	Modeling	Open	Q7, Q8
	TEI	Teacher input	Open	Q1, Q2, Q3, Q4, Q6

Program structure	BUD	Budget	Open	Q2, Q4, Q5, Q9
	FAC	School facilitator	Deductive	Q5
	FLE	Flexibility	Open	Q1, Q5, Q6, Q10
	MOD	Modality, synchronous and asynchronous	Deductive	Q4, Q5, Q6
	NMO	New models	Open	Q1, Q4, Q10
	PAR	Partnership with schools	Open	Q1, Q2, Q4, Q5, Q6, Q9, Q10
	PTT	Part-time teachers	Open	Q1, Q3, Q4, Q6, Q7, Q9, Q10
	ROL	Roles	Open	Q1, Q2, Q3, Q6
	SPL	Supplemental	Open	Q1, Q4, Q5, Q7, Q9, Q10
Visibility	ANO	Anonymity	Open	Q5, Q8, Q9
	PRE	Presence	Deductive	Q6, Q7, Q8

Confidentiality and Ethical Treatment of the Data

Precautions were taken during the research to ensure confidential and ethical treatment of the data. Steps to ensure the protection of all participants' privacy included numerical coding to identify participants and programs. A numerical coding key was created to match participant names to their randomly assigned codes. All data from consent messages, surveys, recordings, transcripts, and the numerical coding key were and will be securely maintained and will be accessible only by the researcher and principal investigator.

Additional steps to ensure the confidential and ethical treatment of interview data include member-checking strategies to verify the accuracy of recording transcripts and increase confidence in data interpretations (Creswell & Poth, 2018). Following each recording transcript verification by the researcher, one-on-one interviewees were asked to verify their transcript for accuracy. All transcript data were coded and secured. The researcher, who works out of a single home office with limited access behind a locked door, will destroy all research-related data in 2027.

Summary

Chapter 3 presented the purpose of the study, research design, setting, participant recruitment and selection, data collection process, and data analysis procedures. The qualitative case study approach involved demographic surveys and semistructured interviews using questions informed by research from the literature review. Interview participants were purposefully selected using demographic surveys to represent a variety of backgrounds and experiences with online learning. The interview protocol and validation methods were presented. The data analysis procedures included deductive and inductive coding to identify patterns and themes. Information regarding the confidentiality and ethical treatment of data was also offered. An analysis of the data leading to each finding is presented in Chapter 4, along with data displays.

Chapter 4: Data Analysis and Findings

Introduction

The purpose of this qualitative study was to investigate leaders' experiences with developing a culturally inclusive community and equitable learning environment in six state-level supplemental virtual programs. Two research questions guided the study:

1. How do leaders in state-level supplemental virtual programs describe their experiences with developing a culturally inclusive community:
 - a. At the program level for faculty and staff?
 - b. At the program and course levels for students?
2. How can instructional and course design practices address barriers to virtual learning in order to facilitate an equitable learning environment for students of diverse backgrounds?

The findings may inform and support leadership practices in supplemental virtual programs at the state level or in school districts.

A demographic survey was used to gather participant data and purposefully select leaders from state-level supplemental virtual programs for interviews. Invitations to complete the demographic survey were sent to 31 leaders across 6 programs. Twenty-two leaders responded to the survey. Twenty-one respondents were purposefully selected for interviews because they had met the minimum threshold of 3 years working in a virtual setting, whereas one person did not (P5). Results from the demographic survey are displayed in Table 8.

Table 8*Demographic Survey Results*

Leader	Level of education	Race and/or ethnicity	Years in a virtual setting	Program role	Years in current role
P1	Doctorate	White or Caucasian	6–8	Executive leadership	3–5
P2	Master’s	White or Caucasian	15 or more	Executive leadership	0–2
P3	Master’s	White or Caucasian	6–8	Curriculum and design leader	6–8
P4	Master’s	White or Caucasian	12–14	Executive leadership	3–5
P5	Bachelor’s	White or Caucasian	0–2	Other program leader	0–2
P6	Doctorate	White or Caucasian	3–5	Director of instruction	3–5
P7	Educational Specialist	White or Caucasian	15 or more	Director of instruction	6–8
P8	Master’s	White or Caucasian	9–11	Curriculum and design leader	9–11
P9	Master’s	White or Caucasian	15 or more	Curriculum and design leader	6–8
P10	Educational Specialist	White or Caucasian	15 or more	Other program leader	12–14
P11	Master’s	White or Caucasian	15 or more	Other program leader	12–14
P12	Educational Specialist	White or Caucasian	12–14	Director of instruction	0–2
P13	Master’s	White or Caucasian	3–5	Director of instruction	0–2
P14	Doctorate	Other	15 or more	Director of instruction	3–5
P15	Master’s	White or Caucasian	6–8	Director of instruction	6–8
P16	Master’s	White or Caucasian	15 or more	Curriculum and design leader	12–14
P17	Master’s	White or Caucasian	15 or more	Director of instruction	12–14
P18	Doctorate	White or Caucasian	15 or more	Executive leadership	0–2
P19	Master’s	White or Caucasian	15 or more	Other Program Leader	12–14
P20	Other	Other	15 or more	Instructional designer	3–5
P21	Master’s	White or Caucasian	15 or more	Other program leader	9–11
P22	Doctorate	White or Caucasian	6–8	Instructional designer	6–8

One-on-one and focus group interview participants consisted of 4 executive-level leaders (19%), 7 directors of instruction (33%), 4 curriculum and design leaders (19%), 4 program

leaders in other areas supporting teaching and learning (19%), and 2 instructional designers (10%). Within this group, 19 participants (90%) identified as White or Caucasian, and 2 participants (10%) identified as a race or ethnicity not represented in the demographic survey. The interviewees' demographics varied in terms of educational level, leadership role, and years of experience working in a virtual setting. Within this group, 12 (57%) had master's degrees, 3 (14%) had educational specialist degrees, 5 (24%) had doctorates, and 1 (5%) identified as *other*. Table 9 offers a comparison of participants' years of experience working in a virtual setting and in their current role. Whereas all had begun working in a virtual setting prior to the pandemic, 71.4% had 9 or more years of experience in the field, and 80.9% had been established in their current role for at least 3 years.

Table 9

Leaders' Years Working in a Virtual Setting and in Their Current Role

Total number of years	Working in a virtual setting		Working in current role	
	<i>n</i>	%	<i>n</i>	%
0–2	0	0.0	4	19.1
3–5	2	9.5	5	23.8
6–8	4	19.1	5	23.8
9–11	1	4.8	2	9.5
12–14	2	9.5	5	23.8
15 or more	12	57.1	0	0.0

Fifteen participants (71%) from six programs completed one-on-one interviews, and six participants (29%) from four programs took part in focus groups. One-on-one interviews were completed with four executive-level leaders, seven directors of instruction, two curriculum and design leaders, and a program leader who works closely with faculty. An instructional designer who was unable to participate in a focus group due to scheduling conflicts also completed a one-on-one interview. Two focus groups were held to accommodate schedules in different time zones

for two curriculum and design leaders, three program leaders who support teaching and learning, and an instructional designer. Tables 10 and 11 display participants' roles and programs in the one-on-one and focus group interviews.

Table 10

One-on-One Interviewees' Roles and Programs

Leader	Program	Program role
P1	E	Executive leadership
P2	B	Executive leadership
P3	A	Curriculum and design leader
P4	F	Executive leadership
P6	E	Director of instruction
P7	D	Director of instruction
P12	B	Director of instruction
P13	F	Director of instruction
P14	E	Director of instruction
P15	E	Director of instruction
P16	E	Curriculum and design leader
P17	E	Director of instruction
P18	C	Executive leadership
P19	D	Other program leader
P20	E	Instructional designer

Table 11

Focus Group Interviewees' Roles and Programs

Leader	Program	Program role	Format
P8	F	Curriculum and design leader	Focus group 1
P9	A	Curriculum and design leader	Focus group 1
P10	D	Other program leader	Focus group 1
P11	D	Other program leader	Focus group 1
P21	A	Other program leader	Focus group 2
P22	E	Instructional designer	Focus group 2

Findings

All interviewees were asked the same primary questions regarding community, course design, and instruction (Table 12). The interview structure was intentionally flexible to allow for unscripted follow-up questions tailored to individual responses. This approach afforded gathering a wide range of data about leadership experiences across different programs and participant roles. The interview questions were aligned to the research questions, as demonstrated in Table 12. Research question 1 correlated with six interview questions (Q3, Q6, Q7, Q8, Q9, and Q10). This research question and associated interview questions attempted to identify (a) how leaders design and facilitate community building for their faculty and staff, (b) how teachers build community with students, (c) how efforts to build a culturally inclusive community may benefit students, and (d) what challenges teachers may experience with building a culturally inclusive community. Research question 2 correlated with seven interview questions (Q1, Q2, Q3, Q4, Q5, Q6, and Q10). This research question and associated interview questions attempted to identify barriers to virtual learning and practices that leaders and teachers utilize to address these barriers through course design and instruction.

Table 12*Interview Protocol Mapping to Research Questions*

Question number	Interview protocol question	Research question(s)
Q1	Please describe your course design model.	R2
Q2	What are some barriers to equity in course design for students in the communities and schools you serve?	R2
Q3	In your experience, what course design practices engage students of diverse backgrounds and abilities?	R1 and R2
Q4	Please describe your instructional model.	R2
Q5	What are some barriers to equity in instruction for students in the communities and schools you serve?	R2
Q6	In your experience, what instructional practices do teachers use to engage students of diverse backgrounds and abilities?	R1 and R2
Q7	Please describe the online learning community at (program name).	R1
Q8	What are some ways that leaders, faculty, and staff in your program develop community?	R1
Q9	What are some benefits and challenges to developing a culturally inclusive community for students in the online environment?	R1
Q10	Is there anything else that you can tell me that would add to this study?	R1 and R2

This chapter presents the data and findings from the interview questions. Twelve findings were discovered: the first six findings address research question 1, and a second set of six findings address research question 2. Each finding will be presented with supporting evidence from interviewee responses. To improve readability, participant quotes have been edited to remove repeated words and conversational spacers such as *like, so, you know, and um*, which do not impact the context or meaning of the interview responses. Participant responses are presented individually in data tables for each finding. This vantage point allows for data analysis across all participants regardless of role, program, or interview format.

Finding 1

State-level supplemental virtual program leaders build community among faculty and staff through a hybrid model for in-person and online meetings, training, and collaboration.

Analysis to Support Finding 1. The participating leaders had established community among their employees through a combination of in-person and virtual experiences. Seventeen state-level supplemental virtual program leaders (81%) shared that they build community by working with employees in F2F and virtual settings. Common factors in establishing community among a virtual workforce included (a) modality of interaction, (b) frequent opportunities to collaborate, (c) an intentional approach to communication and collaboration, (d) sharing ideas and resources, and (e) modeling. Table 13 presents individual participant responses supporting this finding, and Table 14 distills the responses by program.

Leaders expressed support for in-person work experiences. Eleven leaders (52%) from four programs shared that in-person opportunities for faculty and staff were valuable for fostering connections and collaboration. In-person staff meetings and training conferences happened in the capital city (P1, P2, P3, P7, P12, P15, P20) or in different regions to accommodate employees spread out geographically across the state (P1, P3, P14, P15, P16, P20). An executive leader (P1) noted that the regional meeting model seemed to be effective because “there are fewer people you’re interacting with, and you can get to know them on a deeper level [rather] than being one of 300 people in a room.” Six leaders (29%) said that they regularly traveled within the state to connect and collaboratively plan with colleagues (P1, P3, P15, P19, P20, P22).

Participants in programs both with a central headquarters and without spoke positively about how F2F experiences contributed to building community. Programs B, C, and F have offices for full-time staff, program A operates out of regional co-op offices, and programs D and E are fully virtual. Participants from programs C and F did not mention in-person experiences for faculty and staff during their interviews. An executive leader for program B (P2) noted that the

pandemic shifted the expectation from full-time staff working daily in a central office to a more flexible hybrid work model where employees reported to the office on designated days.

With our full-time staff, we're a hybrid office now. Once the pandemic closed our office and we saw [a] space where folks can work [from home], we don't require them to come back in. With our full-time staff, we try to create opportunities for both online and in-person engagement. What we try to recognize is that for many of us, [we] would be great with just a Zoom meeting once a day, and then head down and get to work. But there's some of our team members who really do thrive on that in-person contact. And we have to have both even if we're a virtual organization.

Leaders across programs A, B, D, and E echoed support for in-person work experiences. Ten leaders (48%) stated that dedicating time during F2F events for faculty and staff to interact, learn together, and share ideas strengthened connections and established community (P1, P2, P3, P7, P12, P14, P15, P16, P20, P22).

Leaders from four programs said that they organized annual or semiannual events that included faculty (P1, P2, P3, P7, P12). In program B, leaders structured the time spent together to strengthen connections with one another and complete training: "For 2 or 3 days, we bring everybody into the capital city. We will have some team-building time, we'll have some fun time, and we'll have some training time" (P2). In program E, staff met at a central location for planning, training, and team building several times during the year (P14, P15, P16, P20, P22). A curriculum and design leader (P16) recalled, "We come together, and there's always learning happening there. But there's also a chance to get to know each other a little bit better, whether that's through silly games, the opportunity for group work, or things like that." Teachers participating in cross-curricular regional meetings compared instructional strategies, which

“helped us in a lot of our initiatives to promote some consistency across the board” (P1).

Working with other educators from across the state has helped teachers learn about different cultures and has enhanced their teaching practices. An executive leader (P1) remarked, “They’re learning about those cultures, and they’re changing and modifying their instructional strategies to meet those students’ needs. And that’s increasing their tool belt to take back to their existing classrooms face-to-face classrooms” (P1). This practice aligns with research showing that facilitating opportunities to collaborate and learn together supports building a community of practice (McGee et al., 2017; Philipsen et al., 2019; Wenger et al., 2009).

The potential for isolation is a concern in online learning (Bigatel & Edel-Malizia, 2018; Jackson, 2017; Kumi-Yeboah et al., 2018; Wasfy et al., 2021). Participants in this study indicated that virtual employees occasionally felt isolated (P15, P19, P22). Periodic in-person meetings provided a way to combat loneliness in a virtual work environment (P22).

You talk about separation of time and distance, [and] it can get very lonely in a course when you’re not in a physical space getting to communicate. I know even just being a virtual employee and being away from our full-time staff all the time. Next week, we have our in-person retreat for three days. We just met a little bit ago, and we’re all celebrating the fact that we get to get together in-person and have conversations.

This leader found occasional in-person meetings to be an important means of feeling connected to one’s colleagues in a primarily virtual environment.

Several leaders found that a cross-departmental focus of in-person meetings reinforced a sense of community. An instructional designer (P20) spoke about the importance of time spent together as a larger team “[to] calibrate the strategic vision [through] team dinners that are planned, fun activities, cross-functional work, and collaboration so that we can get a chance to

spend time with other people outside of our immediate team.” Similarly, a professional development leader (P19) proposed that regular meetings with combined teams helped overcome the feeling of separation into departmental “silos” and strengthened work toward a shared program vision. A related approach to encouraging interaction across different departments during in-person events was offered by a curriculum and design leader (P16): “We try to mix it up so that you’re not always working with the same people that you work with day to day, because you probably know them a little bit better than you would people from other departments.” Virtual program leaders helped their faculty and staff feel connected to the wider community through F2F events and multiteam collaboration.

Scheduling conflicts made in-person meetings difficult for some employees, which necessitated offering virtual options (P7, P20). A director of instruction (P7) explained that giving their part-time teachers a choice about which in-person events to attend helped them balance virtual work schedules on top of their regular full-time positions.

Seventeen leaders (81%) said that they developed community through virtual meetings, training, and online spaces to share resources and ideas. Communication using a variety of tools such as Slack (P4), Yammer (P7), Canvas messaging (P15), Zoom (P3, P15, P20), and Google (P16) quickly connected employees. Participants reported weekly meetings with full-time staff on designated days (P4, P13, P15, P21) and a monthly model for faculty and department meetings (P1, P2, P7, P12, P15, P20). A director of instruction (P15) stated that a regular meeting schedule helped faculty and staff “stay out of our silos and stay as connected as we can.” Leaders in program B (P2, P12) described an informal approach to supporting faculty during monthly “just-in-time trainings” where principals met with small groups of teachers to talk openly about what was working well and address any challenges they were experiencing. In

programs C and E, leaders held virtual drop-in hours for faculty and staff (P14, P17, P18). An executive leader from program C (P18) reiterated the importance of leaders being perceived as available to their staff: “I think it’s offering and making sure that that we give opportunities for feedback and conversation. I think that’s been our key to developing community.” Regular opportunities for faculty to work with other teachers, leaders, and support staff encourage *collegial presence* (Sanders & Lokey-Vega, 2020) and the development of expertise in online instruction to better support students (McGee et al., 2017; Philipsen et al., 2019).

Eight leaders (38%) identified creating *intentional* opportunities for employees to interact and targeted communication efforts as leadership practices that facilitated community. An executive leader (P1) noted that working with part-time teachers necessitated being intentional about scheduling times to meet, especially when staff were not generally in the same place or online at the same time. As a result, leaders in program E took a cross-curricular approach to developing a cohesive program community among departments.

We do not have any full-time teachers, so that is a different approach to building community when none of them are with us full-time. We’re intentionally making sure now that we break out. We are crossing content areas to continue to build that organization-wide community and not just six separate communities. (P1)

A curriculum and design leader from program A (P3) echoed a similar focus on specific days and times to meet across instructional departments:

That’s definitely a lot more organized and scheduled out, [and] there are cross-curricular opportunities to meet. There are intervention time focuses, [for] Tier one, Tier two, [and so forth]. The teachers have Fridays as a professional day to some degree and meetings.

Leaders from three programs expressed the need to be intentional in their communication practices with faculty and staff (P1, P2, P13, P14, P15, P16). A director of instruction (P13) dedicated a specific block of time during the day to contact remote faculty and staff individually. A virtual footprint of logged messages helped identify employees who had not received recent contacts. Another director of instruction (P15) sent faculty handwritten “snail mail” postcards to express encouragement and appreciation for their work. In program E, a director of instruction (P14) credited a shift from leader-centered meetings to a more participatory meeting model with facilitating community:

Our meetings were, I would say, at one point really [where] the leaders talked and everybody else listened. We made a conscious effort to make it much more interactive. I let my instructional leaders, for example, do bits and pieces of the meeting so that they can involve the teachers. We do breakout rooms so we can have three or four people in a room, so everybody gets a chance to talk a little bit. Again, these are intentional ways of building community.

A curriculum and design leader (P16) underscored the importance of investing time in getting to know one another: “And we’re really intentional of trying to get to know each other. It really just takes time getting to know your people, but you’ve got to. You’ve got to find ways to bring everybody in.” Intentionally planned interactions build community in the online environment, and they depend on leaders ensuring that there are structures in place to facilitate communication and a time to encounter one another.

Leaders created program structures such as departments, groups, and common spaces to facilitate making connections with one another and sharing resources. Eight leaders (38%) noted that professional learning communities (PLC) were a part of the overall program. Faculty

participating in the PLCs met virtually through web-conferencing or collaborated asynchronously on the LMS. While levels of participation in PLCs varied (P12), leaders said that they had been valuable for teacher collaboration on instructional strategies (P1, P3, P12, P14, P15, P17), course pacing during inclement weather (P1), content-specific challenges (P12, P14, P17), and data analysis (P3, P17, P19). Eleven leaders (52%) described sharing ideas and resources as a way to build community among virtual employees. Faculty and staff freely exchanged resources with one another through tools such as Microsoft Office365 (P7) or a “teacher hub” course on the LMS where all teachers were enrolled (P1). To strengthen individual connections, leaders at program E were working on developing resources and implementing strategies to support social-emotional learning (SEL) (P1, P14, P16, P17). Strategies to support SEL included developing a training course for faculty to better understand this approach in their instruction, making SEL activities available in courses, and dedicating time during meetings at all levels to demonstrate conversation prompts (P1, P14). Other practices that supported employee well-being include book clubs (P3, P14, P17); friendly competition groups to stay active, such as the “e-steppers” (P17); and personal celebrations (P6, P14, P16).

Modeling was a leadership practice associated with community building. Six leaders (29%) noted that modeling with faculty and staff promoted a positive working culture and built community. Modeling positive behaviors for interaction as a leadership practice supports NSQ Teaching Standard C: Community Building (2019). Leaders modeled community building through consistent interaction with employees and a focus on positive relationships with their teams (P4, P15). A director of instruction (P15) elaborated, “When I meet with the whole department, I think I have a responsibility to create that sense of community, that safety and understanding. It’s okay if we mess up. We learn from it. We grow together.” Another leader

(P19) said that modeling positively influenced the program culture: “[Modeling community] starts at the very top. Our leadership team collaborates closely together whether they’re leading in instruction, outreach, support, technology, [or] curriculum. They collaborate regularly, and have a strong rapport with them, so that they can then model.” A director of instruction (P6) described a personal practice of modeling presence and engagement by being visible on camera during meetings. Two leaders modeled tone in text-based communication (P18, P21). Leaders in state-level virtual programs modeled community-building strategies for faculty and staff through collaboration and their communication practices.

Finding 1 Summary. State-level supplemental virtual program leaders build community among faculty and staff through a hybrid model for in-person and online meetings, training, and collaboration. Tables 13 and 14 present the structures and practices that leaders implemented to facilitate community for their online faculty and staff. Participants from two programs with a central headquarters did not mention in-person events or travel within the state as practices that supported community, whereas participants from fully virtual and regional program models found these experiences to be valuable. Participants from all programs discussed virtual opportunities to meet regularly, collaborate, and share resources. Other common leadership practices included implementing an intentional approach to interaction, sharing ideas and resources, and modeling positive communication behaviors. This finding supports the concept of a *digital habitat* where individuals collaborate, facilitate sharing, and manage work tasks in an online community (Wenger et al., 2009).

Table 13*Hybrid Model for Meetings, Trainings, and Collaboration, by Participant*

Factor	P 1	P 2	P 3	P 4	P 6	P 7	P 12	P 13	P 14	P 15	P 16	P 17	P 18	P 19	P 20	P 21	P 22
In-person events	X	X	X			X	X		X	X	X			X	X		X
Travel within the state to work with colleagues	X		X							X				X	X		X
Virtual meetings	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Intentional opportunities to interact	X	X	X					X	X		X		X	X			
Professional learning communities		X	X			X	X		X	X		X		X			
Sharing ideas and resources among faculty	X		X	X		X	X		X	X		X	X	X		X	
Social-emotional learning	X								X		X	X					
Modeling effective communication				X	X					X			X	X		X	

Table 14*Hybrid Model for Meetings, Trainings, and Collaboration, by Program*

Factor	A	B	C	D	E	F
In-person events	X	X		X	X	
Travel within the state to work with colleagues	X			X	X	
Virtual meetings	X	X	X	X	X	X
Intentional opportunities to interact	X	X	X	X	X	X
Professional learning communities	X	X		X	X	
Sharing ideas and resources among faculty	X	X	X	X	X	X
Social-emotional learning					X	
Modeling effective communication	X		X	X	X	X

Finding 2

State-level supplemental virtual program leaders facilitate a supportive community for faculty and students through a variety of staff roles within the organization.

Analysis to Support Finding 2. A virtual staff supports a variety of faculty and student needs within the program. Seventeen state-level supplemental virtual program leaders (81%) described a variety of staff roles that facilitate a supportive community for faculty and students. Common support roles in the program included (a) curriculum specialists, (b) instructional designers, (c) subject matter experts, (d) instructional leaders, and (e) student support personnel. Individuals in these roles supported technology, content, training, and instructional needs for faculty. They also assisted with accessibility and wraparound student services for special education and academic planning. Table 15 presents individual participant responses supporting this finding, and Table 16 displays the responses by program.

In state-level supplemental virtual programs that develop course content, curriculum teams are tasked with developing and revising program curricula. Seventeen leaders (81%) said that curriculum specialists serve a vital role. Although curriculum job titles varied among

programs, individuals in this role managed the entire course development process from initial course outlines using applicable standards, through the content development and final course reviews (P2, P8, P12, P15, P16, P18, P19, P20, P21). An executive leader (P18) indicated that their full-time curriculum positions were dedicated to “content development” and “providing students [with] resources.” A curriculum and design leader (P8) described the area of responsibility as accounting for planning, course revisions, new course additions to the catalog, course elements, and the development budget. Curriculum teams managed regular course reviews (P8, P15, P17) as well as Quality Matters reviews for course certification (P1, P3, P4, P9, P12, P14, P15, P16, P17, P19, P20, P21, P22). As part of course development projects, specialists trained writers and subject matter experts who were involved in building courses (P4, P17) and collaborated with instructional designers who formatted content within the online course (P20).

Curriculum specialists also worked with leaders, instructional designers, and teachers to resolve accessibility issues and support students with disabilities (P1, P6, P13, P16). A curriculum and design leader described how the program partnered with the state school for the Deaf and for blind individuals to ensure that students with disabilities could access and interact with content (P16). A team of instructional leaders and designers visited schools to “[work] with the students [and] to see how they’re able to interact with the course.” School visits such as these provided insight into how course design such as alt-text, closed captions, and automated screen readers needed to be adjusted for students with disabilities.

Several programs worked with instructional designers as part of the curriculum team. Twelve leaders (57%) said that instructional designers supported both the course design process and teachers in their instructional delivery. In this role, designers utilized different tools to

organize text, interactives, and media in courses (P4, P8, P12, P13, P14, P20, P21). They worked alongside subject matter experts to ensure course usability, functionality, and accessibility (P4, P6, P13, P16, P20, P22). Instructional designers provided regular feedback to subject matter experts throughout the course design process (P17). A director of instruction (P13) explained this collaborative approach to course design: “Our subject matter experts really give the roots of the content and the flow, making sure it’s aligned with the standards. Our instructional design team helps put that content into a beautiful package that’s accessible to our students.” Instructional designers assisted teachers with utilizing educational tools in their instruction (An, 2021; Barbour et al., 2018; McGee et al., 2017; Russell, 2020). A curriculum and design leader (P3) described instructional designers as partners with teachers who helped them accomplish their instructional objectives:

Our design model really tries to meet sometimes conflicting needs. You may have this innovative idea that an instructor wants to do, but then you also have this reporting mandate over here that has to happen. And the goal of an instructional designer is to make those two worlds meet and try to find a solution.

Similarly, an instructional designer (P20) recalled that when teachers came to them with ideas, “we [talked] them through their instructional intent and [gave] them some guidance of how our tools, how our technologies work.” In this way, instructional designers worked in partnership with the instructional team “to ensure that students get what they need” (P20).

Leaders hired subject matter experts to serve on content development projects. Fourteen leaders (67%) mentioned working with subject matter experts during the course design process. These experts planned how a course would be organized into modules and lessons (P16, P22) and wrote course content (P4, P8, P13, P14, P15, P16, P21, P22). They also reviewed developed

content (P22) and ensured alignment to state standards (P13, P16, P20). With regard to proposed course corrections, a director of instruction (P7) said that subject matter experts reviewed the requested changes for accuracy and determined whether they should be put into blueprints for future iterations of the course. Although programs regularly worked with these experts on curriculum development projects, a director of instruction (P17) noted that finding qualified individuals was a challenge, particularly in world languages.

Instructional leaders provided oversight to faculty working directly with students. Eleven leaders (52%) described how instructional leaders worked closely with faculty through a departmental structure. While job titles vary among programs, instructional leaders performed similar tasks such as supervising teachers (P7, P12, P14), conducting observations (P2, P12, P14), and meeting regularly with faculty (P1, P6, P7, P12, P13, P14, P15, P17). They communicated program updates and processes during faculty meetings (P1, P2, P7, P12, P15, P20) and kept their virtual doors open by offering moral support during drop-in fireside chats (P14, P17). A director of instruction (P15) described a supportive team approach to prevent faculty from feeling isolated in their work: “No one ever struggles solo. We’re always here. We’ve got layers of support. There’s instructional leaders. There’s course leads, and then, of course, there’s instructional directors to make sure our teachers have robust support structures.” Instructional leaders coached and mentored teachers (P12, P14), addressed parent concerns, created teaching schedules, and managed enrollments (P7, P14). Finally, they reviewed annual survey data as a team to identify and address instructional concerns (P14, P18).

Unlike LEAs, state-level supplemental virtual programs do not grant diplomas, administer state assessments, manage special education services, or provide counseling (Watson, 2022). Students remain full members of the LEA, and virtual programs work in partnership with

the school for counseling and special education services. Nonetheless, some virtual programs have created their own support roles to assist faculty and students. Six leaders (29%) shared that program staff served in student support roles and assisted with special education, counseling, and registration (P4, P7, P8, P9, P10, P11). In the first focus group, three leaders (P8, P9, P10) expressed agreement with one another regarding the need for student support staff. A leader in program D (P10) noted that individuals working in student services helped oversee “all areas having to do with special education, Section 504, hospital homebound, [and] ESOL [English for speakers of other languages].” A director of instruction from the same program (P7) said that their student services team received all special education paperwork from the local school and assisted with how accommodations aligned to the online learning environment. The student services team communicated with teachers, schools, students, and families about how the accommodations would be implemented and reviewed a “communication protocol” if they had questions. The director of instruction (P7) elaborated on additional support offered to students through the program: “Students are also assigned a student services coach that they work directly with that oversees the implementation of all of those accommodations [and] serves as kind of a first line of support for teachers if teachers have any questions.” Program A added multiple “special populations” roles within the program (P9). Other student support staff provided counseling, assisted with registration (P11, P13), and served as a liaison with the local school or families of homeschool students (P13).

A sense of community in a state-level virtual program is provided by a network of individuals who support one another in their daily work. A professional development leader (P19) suggested that the community of support for faculty started with induction training to understand the instructional tools and introduce faculty to program support staff: “You know

what it means to be part of the community, and what the mission of the school is, so that people have resources, but also feel that they belong to something.” An instructional designer (P20) described developing a supportive community for faculty as vital for meeting students’ educational needs: “I think [it’s about] encouraging a culture where teachers know that they’re part of a greater community. They know that they’re not acting alone. [This] is important to be able to provide what students need in that day-to-day level.” In a virtual setting, the feeling of community is created through understanding how individuals are connected and knowing whom to go to for assistance.

Finding 2 Summary. State-level supplemental virtual program leaders facilitate a supportive community for faculty and students through a variety of staff roles within the organization. Tables 15 and 16 present staff roles that support teaching and learning in a state-level virtual program. Participants from all programs noted the contribution of curriculum specialists and subject matter experts to course design. Leaders in the second focus group (P21, P22) acknowledged similar course development models involving subject matter experts. Four programs mentioned staffing instructional designers to assist with course development and technology-related instructional concerns. Instructional designers work on program curriculum teams and help teachers with educational technology (An, 2021; Barbour et al., 2018; McGee et al., 2017; Russell, 2020). Instructional leadership structures varied across programs. In this role, leaders may supervise and evaluate faculty, create schedules, provide mentorship, and assist with student concerns (Garza Mitchell, 2009; McLeod & Richardson, 2018; Wasfy et al., 2021). Half of the participating programs have created staff roles to assist faculty with student support, such as special education, counseling, and registration. Through a community network approach, leaders are better positioned to support the diverse needs of faculty and students.

Table 15*Roles Within the Program to Support Faculty and Students, by Participant*

Staff role	P 1	P 2	P 3	P 4	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13	P 14	P 15	P 16	P 17	P 18	P 19	P 20	P 21	P 22	
Curriculum specialists	X	X	X	X			X	X			X	X	X	X	X	X	X	X	X	X	X	X
Instructional designers			X	X	X		X				X	X	X		X	X				X	X	X
Subject matter experts			X	X		X	X				X	X	X	X	X	X	X			X	X	X
Instructional leaders	X	X			X	X					X	X	X	X		X				X	X	
Student support services				X		X		X	X	X		X										

Table 16*Roles Within the Program to Support Faculty and Students, by Program*

Staff role	A	B	C	D	E	F
Curriculum specialists	X	X	X	X	X	X
Instructional designers	X	X			X	X
Subject matter experts in course design	X	X	X	X	X	X
Instructional leaders, department leaders	X	X		X	X	X
Student support services	X			X		X

Finding 3

State-level supplemental virtual program leaders have developed and implemented processes that support teacher input in course content and autonomy in course instruction.

Analysis to Support Finding 3. In participating programs, course content was developed within the program and provisioned to teachers as a set package. Teachers did not design their own courses. Seventeen state-level supplemental virtual program leaders (81%) described processes that allow teachers to give input on course content and retain some autonomy in instruction. Common practices shared by leaders that support teacher input and autonomy within this model include (a) a process for teachers request course changes or corrections, (b) subject matter experts who are faculty members, (c) flexibility to add supplemental resources, and (d) flexibility to assign resources and adjust pacing according to student needs. Table 17 displays program approaches to content development, and Table 18 presents individual participant responses supporting this finding.

Leaders from all six participating programs shared that courses were designed at the program level by a curriculum team. In programs A, B, D, E, and F, all or most courses were created in-house. Participants conveyed pride in their internal content development processes, which started with the state standards (P6, P12, P13, P16, P19). A focus on the state standards as the foundation for courses ensured that students taking virtual courses had similar experiences to other learners across the state and that they were prepared for state-level assessments (P19). K–12 leaders are tasked with aligning curricula to applicable state standards and appropriately evaluating learning each year (Rice & Skelcher, 2018). Designing courses at the program level according to state standards increased credibility with schools enrolling students through the virtual program. A director of instruction (P12) said,

Districts and administrators alike know we are building our courses from the ground up. It is not an outside agency. We do use a lot of OER [open educational resources] and different materials. But I think that really does help with the connection that we have with schools.

Twelve leaders from programs A, B, D, E, and F noted that courses were developed according to Quality Matters standards for course design (P1, P3, P4, P12, P14, P15, P16, P17, P19, P20, P21, P22). Researchers have indicated that course design practices should be aligned to standards of quality and frameworks such as Quality Matters (Baldwin et al., 2018; Barbour et al., 2018; Bigatel & Edel-Malizia, 2018; Gacs et al., 2020).

Creating an online course was described demanding and time-consuming (P2, P6, P7, P15, P16, P19, P22). It took approximately 20 weeks to develop a semester course (P2), or nearly 1 year for a complete course (P15, P16, P19, P22). An executive leader explained (P2), “There’s just a lot of work that goes into developing that content; it’s not as easy as it sounds because we’re providing the full package. So, everything has to be ready to go out the gate and work together.” Another executive leader (P18) remarked that creating a course required an understanding of online design that teachers may not have:

What we learned over time is that teaching and designing is just really such a different job that a lot of our even amazing teachers that come to us saying they want to design a course just don’t have the skill set to reasonably do it. And so, we try as much as possible to add a distance learning expert in the mix somewhere, so that we’re not expecting someone to come up with ideas about how to engage a student online if they don’t have, or if they only have, teaching experience with us.

Teachers participating in formal course development projects completed training (P4, P17) and were paired with instructional designers, who assisted with integrating tools (P4, P8, P12, P13, P14, P20, P21) and formatting course content to meet accessibility standards (P4, P6, P13, P16, P20, P22). A director of instruction (P6) suggested that providing teachers with fully built curricula allowed them to focus their time on instruction rather than development:

“[Receiving a course] allows our teachers to focus solely on the kid and meeting those needs, rather than trying to scramble and spend hours and hours developing content.” Participants viewed delivering ready-made content as a necessary support for teachers (P2, P6, P7, P15, P16, P19, P22).

In program C, approximately one-third of courses were designed in-house, whereas other content was purchased from a vendor and adapted at the program level (P18). Content was designed by the program when not available through vendors, such as for unique offerings and dual-credit courses. A recent project for program C was developing Indigenous language courses. An executive leader (P18) said that hiring someone with experience and connections to the tribal community had been essential to the project’s success:

We were extremely lucky to be able to hire a teacher that taught for us, but then also was a more cultural education expert and had worked on a reservation for all of her teaching career. [She was able] to become a project manager for us in engaging in that really detailed process to build relationships, work directly with tribal leaders, and also build trusting relationships.

Building relationships and learning from tribal education committees in state C helped ensure that virtual course content complied with a state statute that learning materials and instruction were relevant and culturally sensitive to Indigenous populations (P18). This executive leader

(P18) also shared a learning curve that involved taking “a more careful eye” to open educational resources and vendor content and examine how tribal information was presented: “We know that we just can’t adopt [content] off the shelf.” Leaders adjusted content as needed at the program level to ensure that the course information presented to students was culturally relevant.

Although teachers did not develop their own courses, 14 leaders (67%) mentioned a process for teachers to share input and request changes. Teachers submitted a form with their suggestions for course corrections and changes directly to the curriculum team (P2, P3, P7, P9, P12, P15, P16, P19, P21, P22). Leaders in the second focus group (P21, P22) acknowledged having similar processes for submitting course change requests. Change requests were to repair broken links (P7), to adjust an assignment’s level of difficulty (P22), or to make suggestions for improving the curriculum (P2, P3, P14). Teachers also relayed course concerns to their instructional leaders to send to the curriculum team (P6). The curriculum team and subject matter experts reviewed submitted requests and determined whether changes would be made to the main course copy used as a blueprint (P3, P7, P12, P22). Teachers were consulted for feedback during a content development project (P17), or they were asked to participate on curriculum teams as subject matter experts (P20). An instructional designer (P20) described how teachers were identified to participate in course projects: “We usually designate a team of teachers that will potentially be teaching a certain course to write the content, to be able to create videos, write assessments, and provide the learning materials that can go into an online course.” By implementing processes to collect, consider, and apply teachers’ suggestions for courses, leaders demonstrated value for their contribution to improving program curricula.

While teachers received a prepackaged course at the start of the academic term, sixteen leaders (76%) shared that teachers had the autonomy to create supplemental resources. Teachers

were able to add documents, practice, and videos to course modules (P2, P3, P12, P13, P14, P15, P18, P19, P20, P21), and were encouraged to include resources, “especially for concepts that they know students are struggling with or for individual interventions” (P3). When teachers noticed that students were having difficulty understanding a topic, they scaffolded learning through “tutorials” (P18) or targeted “micro-topic videos” (P21). The announcements tool provided a space to tailor instruction to a particular group’s needs (P22).

Teachers addressed learning gaps by working with students individually in a “virtual session” or over the phone (P22). They also created modified versions of assessments to support students with accommodations (P3). Even though teachers had “leeway” to adapt content, some felt limited by the constraints of a set course model (P19): “If you polled our teachers, they would say that they have very little [leeway]. With professional development, [we try to] give them new tools and new ways to think about how they [can] make the courses their own.” Providing teachers with a variety of tools allowed them to choose what worked best for their group of students (P7). This practice reinforced Barbour et al.’s (2018) recommendation that K–12 online educators leverage instructional tools that engage students and encourage them to interact with the course content.

Two leaders shared that teachers had increased freedom to develop their own instructional materials for synchronous instruction (P7, P13). A director of instruction with program F (P13) described how teachers designed their own lessons and assessments for the program’s fully synchronous model: “In our synchronous courses, the content is built out from our teachers instead of our instructional design team. Teachers have full control over adapting assignments, adding assignments, adjusting content, whatever they need to do.” In program D, poor student attendance at weekly sessions in some content areas caused leaders to make it

optional for teachers to conduct structured lessons during that time (P7). A director of instruction (P7) elaborated on this decision: “We wanted to leave a little bit of flexibility for teachers who know [what is] going to benefit students to really take the time to build something that will be meaningful and engaging to them.” Leaders recognized teacher autonomy in instructional processes to determine how to best serve students’ needs through synchronous instruction or developing asynchronous video lessons.

Four leaders (P1, P12, P15, P17) mentioned that teachers had the “discretion” to make instructional changes that were in the best interest of students. For example, teachers could assign resources to specific groups (P1, P2, P4, P7, P15, P17, P18): “So, they’ve got pieces of content and can decide [whether] this group of students needs this, or this group does not. And they have flexibility to assign resources, activities, etc.” (P1). Courses also offered different assignment types, affording teachers a choice about what to assign their students (P3, P7, P16).

Depending on students’ needs, the pace of instruction was adjusted by teachers during the course term (P1, P3, P6, P12, P18, P19). An executive leader (P1) said, “Teachers are given the freedom to slow down or speed up the instruction based on students’ needs.” Most platforms permit teachers to individualize pacing within a course section. This leader (P1) told that they “emphasize pacing as a way to support diverse backgrounds and abilities.” When a natural disaster disrupted instruction to students in one-third of state E’s districts for over a month, teachers collaborated on content-area teams to determine how to best address changes to pacing and course assignments while still covering all standards.

Finding 3 Summary. State-level supplemental virtual program leaders have developed and implemented processes that support teacher input in course content and autonomy in course instruction. Table 17 displays the program models for course development, and Table 18

presents processes that allow for teacher input on course design and instructional delivery. All programs developed original courses or adapted vendor content within the program. Teachers were provided with a complete course package at the start of the academic term. A benefit to K–12 online teachers receiving high-quality curriculum rather than having to develop their own materials is having more time to focus on instruction and build relationships with students (Schueler & West, 2022). In each of the participating programs, leaders have put processes in place for teachers to provide input on courses and participate in course creation. Leaders also supported teacher autonomy to create supplemental resources, adjust instruction, and adapt course pacing. These practices helped underscore the professionalism and contribution of teachers to the program community.

Table 17

Course Development Model, by Program

Course development model	A	B	C	D	E	F
All or most courses are designed in-house by a curriculum team.	X	X		X	X	X
A curriculum team in-house designs fewer than half of courses.			X			
Course content is purchased from vendors and adapted at program level.			X			

Table 18

Teacher Input on Course Design and Instructional Delivery Processes, by Participant

Process	P 1	P 2	P 3	P 4	P 6	P 7	P 12	P 13	P 14	P 15	P 16	P 17	P 18	P 19	P 20	P 21	P 22
Teacher input on course content and design		X	X		X	X	X	X	X	X	X	X	X	X		X	X
Teacher autonomy in creating supplemental resources	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
Teacher flexibility with instructional processes	X	X	X	X	X	X	X	X		X		X	X	X			

Finding 4

Building relationships with students supports the course community and student engagement in a state-level supplemental virtual program model.

Analysis to Support Finding 4. Students working in an online environment are encouraged and sustained by forming connections with the teacher and one's peers (Borup et al., 2020). Nineteen state-level supplemental virtual program leaders (91%) shared that building relationships with students supported community and student engagement at the course level. Common factors that influenced community in online courses included (a) building individual relationships, (b) SEL, (c) vulnerability, (d) peer interaction, (e) connecting with various communities, and (f) travel within the state for school visits. Table 19 displays the factors in building relationships with students that support this finding.

Connecting with individual students facilitates community building at the course level. Nineteen leaders (91%) shared that building individual relationships was an essential practice to support and engage students. Three directors (P2, P7, P14) cited making individual connections as the most important practice an online teacher can do: "The biggest thing that engages students is being able to make a personal connection: seeing the teacher's face, hearing their voice, getting personal messages, so that the student knows that that teacher is recognizing them as an individual" (P7). Teachers were encouraged to get to know their students and to make a personal connection with them (P2, P4, P6, P7, P14, P19, P20, P21, P22). Teachers learned their students' hobbies and interests through initial course welcome calls (P4, P8, P13), polls and surveys (P14, P15), or "entry tickets" (P21) in synchronous sessions. Two leaders in the first focus group (P8, P9) agreed that building relationships improved student engagement. In program E, teachers

incorporated SEL components in asynchronous discussions to facilitate community building (P1, P14, P16, P22).

Building individual relationships helped students engage with course content (P2, P3, P15, P16): “It’s building the relationship with the kids. And then knowing the students well enough to connect their interest into the content. It really lends itself to a lot of personalization, which is wonderful” (P15). An executive leader (P2) said that they looked for ways to “generate engagement and interaction between the students, and the teachers, and the content.” According to a director of instruction (P17), teachers in areas such as career and technical education and world languages needed to get to know their students well to help them refine content-related skills. This involved figuring out each student’s skill set so that they could provide personalized feedback.

A curriculum and design leader (P3) related a story as an example of the impact that building individual connections could have. A student who attended the state school for the blind was taking a college-level algebra course through the program because it was not available locally. As part of the traditional virtual program model, the student attended synchronous meetings at least twice weekly, completed asynchronous lessons in the LMS, and received many accommodations:

His teacher, he felt, went above and beyond to make sure that he had what he needed.

And he had always hated math. He was not really excited about taking this course. But the connection he made with his teacher and the experience he had changed [things for him]. He now thinks he might want to major in math and said that one of the things he appreciated about his experience [was] at the school for the blind he often felt treated more like a patient than a student. And he appreciated the school for the blind, but said,

“For the first time, I felt like just a normal student in a normal class.” And it gave me chills to hear him say that. He sang the praises of this teacher. He connected with her really well. I mean, it gave testimony to the fact that you can still connect and have a relationship with your students, even in the digital environment.

In this example, the student felt valued by the teacher as a member of the class, and the experience changed their outlook and self-perception of potential as a math student. Similarly, an executive leader (P1) described the benefits of making personal connections with students.

“When a student can feel valued as an individual and know that their teacher sees their strengths and also sees opportunities for their growth, it creates that supportive learning environment that we would hope every student would have.” Through individual connections, teachers may nurture learners and motivate them to participate in the course community (Borup et al., 2014).

Participants shared several challenges related to building relationships and engaging students online. A director of instruction (P12) recalled a common complaint: “You can lead a horse to water—you’re only able to do so much if you can’t get the kids engaged. And we struggle with that in some cases with some individuals.” Students may disengage from an online class due to isolation, not enjoying the content, or not relating to the teacher (Borup et al., 2020). Similar to the classroom when something was not working well, online teachers tried to change their approach and find another way to motivate and involve students (P12).

Another challenge was that building trust with students in the online environment took time (P1, P12). A director of instruction (P12) explained, “We’re doing the best that we can. But sometimes it’s hard to try and build that relationship in 12 or 16 weeks when they’re just in there for the content.” Students in state-level supplemental programs generally took one or two classes (P2, P12, P14), so the opportunity to develop a connection over time was limited. For students

and teachers alike, building relationships online involved a willingness to “open up and be vulnerable” (P1) and show one’s personality (P13, P14). An executive leader (P1) elaborated that establishing trust and making meaningful connections with others was a slow process in the online environment: “That is a challenge we have to acknowledge in online, and just encourage people [to not] give up. [Building trust] may take a little more time because of that difference, and where you’re located.”

A director of instruction (P13) shared an example of how relationship building in synchronous courses created a positive group dynamic. In program F’s synchronous model, students worked together on inquiry-based tasks. Teachers implemented a “think aloud” process where students led the group by sharing their thought process aloud as they worked through tasks together. The leader (P13) shared that this approach worked well because students had become more comfortable with taking risks: “When you foster that relationship building with students, and you let them know that it’s okay to share and be vulnerable and to not have it perfect, [then] students started respecting each other and asking questions.” Fostering positive relationships with students in this way encourages cognitive engagement and the co-construction of knowledge (Borup et al., 2020).

Five leaders (24%) mentioned opportunities for peer collaboration, but participant perspectives on having students work together varied according to modality. In programs A and F, where synchronous instruction was a regular part of the model, students had a set place and time for peer interaction (P9, P13, P21). Students frequently worked in small groups using “a jigsaw model” (P13). In this model, students worked with others in breakout rooms and then returned to the main room to “share out [loud] with each other, rather than listening to one person the whole chunk of their time.” A focus in program D had been on encouraging project-

based learning with small groups, which aligned to the program's goal of developing co-curricular skills in community and communication (P19).

On the other hand, a director of instruction for program E (P14) shared that the disconnect in asynchronous students' schedules at their local schools hindered opportunities for peer collaboration and group work: "We don't really do group activities because it's just so hard since our kids [have class] at different times in different schools. And I'm not aware of too many teachers who actually do any group activities." Students in program E could elect to participate in peer tutoring as an optional academic support. The leader expressed that "the relationship that students build with each other [through tutoring] helps them through various other issues that might be going on" (P14). While peer collaboration can support cognitive and social presence (Barbour, 2018; Bigatel & Edel-Malizia, 2018; Gacs et al., 2020; Hammond, 2017), this type of learner-learner interaction may be limited in state-level supplemental virtual programs with a primarily asynchronous model.

Nine leaders (38%) mentioned that a benefit of taking online courses through state-level supplemental virtual programs was that it brought together students from various communities across the state. Leaders from five programs noted that they served a sizable percentage of students from rural areas (P1, P2, P3, P7, P11, P12, P13). Within the online course, students who may never have traveled far from their house could connect with others outside their hometown (P12, P13, P15). The opportunity to interact with peers from a variety of backgrounds enriched the learning experience and helped break down barriers (P15). A director of instruction (P15) explained, "It helps students see outside of themselves that there is a world bigger than them, bigger than their experiences. And that's how we help them grow as people, not just as a social studies or a math student." Similarly, an executive leader (P18) suggested that working with

students from different locations in a shared space accomplished the “broad goal” of public education to expose students to other people and other points of view outside one’s cultural expectations. This supported a call for teachers to promote an inclusive course community for students from different backgrounds (Kumi-Yeboah et al., 2018; Rothstein & Haar, 2020).

Occasionally, leaders and teachers traveled on school visits to meet their students in person (P1, P3, P6, P14, P15, P17, P21). Although limited, these F2F connections bolstered social presence by helping students see their teachers as real people who cared about them (Akcaoglu & Akcaoglu, 2022; Garrison, et al., 2010).

Finding 4 Summary. Building relationships with students supports the course community and student engagement in a state-level supplemental virtual program model. Table 19 presents several factors that can influence how teachers foster connections with their students. Establishing a sense of community starts with teachers building individual relationships, which was strongly supported by leaders from all six programs. This finding aligns with previous research connecting efforts to build community in online settings with enhanced student engagement (Anderson-Mejías, 2018; Bigatel & Edel-Malizia, 2018; Borup et al., 2020; Enkin & Mejías-Bikandi, 2015; González-Lloret, 2020; Hammond, 2017; Rothstein & Haar, 2020). Leaders in this study attributed the instructional practice of teachers making personal connections with students to higher levels of engagement in courses. They noted the benefit of students interacting with peers from different communities across the state. However, fewer leaders mentioned student collaboration as a factor that contributed to building relationships or community. Although the course community is strengthened by opportunities for learners to work with one another (Lokey-Vega et al., 2018), the experiences of leaders in this study suggest

that facilitating a common time and space for this type of peer interaction may be a challenge in primarily asynchronous models.

Table 19*Factors in Building Relationships Within the Course Community, by Participant*

Factor	P 1	P 2	P 3	P 4	P 6	P 7	P 8	P 9	P 11	P 12	P 13	P 14	P 15	P 16	P 17	P 18	P 19	P 20	P 21	P 22	
Building individual relationships	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Social-emotional learning	X											X		X							X
Vulnerability	X										X	X									
Peer collaboration								X			X	X					X			X	
Various communities	X	X	X		X	X			X	X	X		X			X					
Travel for school visits	X		X		X							X	X		X					X	

Finding 5

Frequent, positive communication with students and families using a variety of tools builds course community and promotes student engagement in state-level supplemental virtual programs.

Analysis to Support Finding 5. Eighteen state-level supplemental virtual program leaders (86%) shared that frequent communication with students and families using multiple tools is a practice that builds community and promotes student engagement. Communication is broadly defined to include information sent in a text-based format, verbal interaction via phones or web-conferencing, and F2F meeting opportunities. Communication with students and families happened at both the course and program levels, through planned messaging and special events. Common tools used to communicate with students and families included (a) course tools in the LMS, (b) discussion boards, (c) phone calls and texts, (d) emails and messages, and (e) web-conferencing. Table 20 presents communication practices that support building community by participant, and Table 21 shows the tools teachers use extensively in their communication.

Sixteen leaders (76%) shared that frequent communication with students was a practice that supported community (P1, P2, P4, P6, P7, P8, P9, P12, P13, P14, P15, P16, P17, P18, P20, P21). Teachers used a variety of tools to communicate with their students (P1, P2, P3, P4, P6, P7, P8, P9, P10, P12, P13, P14, P15, P16, P17, P18, P20, P21). An instructional designer (P20) underscored the importance of teachers communicating with their students to develop individual connections: “I think that the communication piece for teachers is really huge. It starts with building those individual relationships, getting to know students, what their experiences [are], where they’re completing their coursework.” Regular teacher communication practices supported affective engagement for students in the course community (Borup et al., 2020; Tuiloma et al.,

2022). Leaders set baseline expectations for how frequently teachers needed to communicate with students and families, and these expectations were part of teacher evaluation practices (P6, P12, P15). In program E, teachers individually contacted students at least once every two weeks, and they made parent contacts at least once a month (P15).

Nine leaders (43%) identified communication with families as a program practice that supported students. Leaders shared that communication began with presenting Open House webinars (P7, P14) and assisting families with understanding online learning expectations (P6, P7, P12, P14). A director of instruction (P6) mentioned that one challenge since the pandemic has been helping families understand how online learning differed from emergency remote instruction, a distinction which has been explored by researchers since 2020 (Barbour, 2021; Gacs et al., 2020; Watson, 2022). Negative experiences from the pandemic influenced parental support of online learning (P6): “[Families] don’t understand it, so they rebel against it, which I understand [because] it’s different. They’ve had a bad taste before.” At the program level, leaders and program staff worked with families to share information about the learning model and updates (P1, P11). Program E offered two training courses and regular outreach meetings to help families understand the tools that students use regularly as well as the online platform (P14).

Leaders acknowledged the role that families play in supporting students, but they shared several challenges with family communication. Three leaders mentioned that families sometimes did not realize that the virtual program was separate from the F2F school (P6, P7, P19). A director of instruction (P7) explained how messages sent from the program or from teachers to families “oftentimes fall on deaf ears because they are lumping that in with all of the communication they’re getting with the students’ brick and mortar school.” Another director of

instruction (P6) described how mixed messages from the local school created confusion about how students would receive instruction:

One of the schools that we talked to two days ago at Open House told their parents, they're not doing online learning. Yesterday my teacher called and said, "Hey, welcome to online learning." And [the school] hadn't told the parent. And that causes an issue.

A disconnect in communication between the school administration and families hampered welcome processes with the virtual teacher at the start of a term.

On the other hand, family contacts made early in the semester were helpful in establishing that a real person was working with their students (P7). During a parent phone call, a director of instruction recalled once being told, "Oh, gosh! I didn't even realize you were a real human being." Adding American Sign Language (ASL) to the course catalog changed how leaders communicate with faculty and families (P17). When working with teachers whose primary language is ASL, leaders enabled live transcription during faculty and department meetings. Communication between families and ASL teachers involved bringing in a translator to ensure that all parties understood one another. Family involvement is a necessary support for virtual students, particularly younger learners (P14), and researchers have recognized the role that families play in monitoring and motivating learners (Barbour, 2018; Borup et al., 2014, 2020; Kumi-Yeboah et al., 2018).

Teachers communicated frequently with students at the course level. Thirteen leaders (62%) reported that teachers used course tools such as announcements, videos, and surveys to communicate with students. Teachers posted announcements in their courses multiple times each week to share course updates, information, student celebrations, and recognitions (P2, P6, P10, P16, P22). The announcements were used as a creative space to capture students' attention. In

some courses at program B, students voted on a class mascot who later showed up in class announcements (P2). Teachers also personalized announcements by recording short videos so that students could see and hear them (P2, P21, P22). A director of instruction (P6) described adding teacher-created video content to connect with students as a way of “personalizing a harder-to-personalize setting.” Short course surveys were another tool used to engage students. Teachers posted surveys to gather information about a topic, assess understanding, and give students a reason to participate in the course (P12, P13, P15, P16). Surveys related to the course content, or they were nonacademic, such as learning who students wanted to win the Super Bowl (P16).

Six leaders (29%) mentioned using course discussions for communication, and they presented different perspectives about the effectiveness of this tool. Discussions provided a common space for students to interact with their peers and the teacher (P10). A director of instruction (P12) shared that one challenge with discussions was that students “[had to] really want to throw themselves out there, to introduce themselves and communicate with others” in order to promote a conversation: “Quite honestly, what do most kids do? You know you’re supposed to make one post and respond to two people. Okay. So, they just say, ‘Hi,’ and then they leave. And they don’t engage.” Sustained communication between students in the discussion forum was sometimes limited. Another director of instruction (P15) noted that discussions with meaningful prompts connected students from different backgrounds: “The discussion boards are [a] great time for kids to connect across the state, share their culture, [and] share their backgrounds.” A recommendation for successfully facilitating discussions was “moderating without micromanaging,” particularly in content areas such as social studies that touched on controversial topics (P15). An executive leader (P2) said that teachers established

presence through their participation in course discussion, which is supported by Garrison et al.'s (2000, 2010) research on the CoI.

Thirteen leaders (62%) shared that phone calls and texts were a common mode of communication with students and families. Although leaders noted making phone calls as a routine communication practice, teachers had limited success in reaching students and families (P1, P2, P6, P7, P8, P12, P13, P14, P15, P16, P17). A director of instruction (P6) said that not being able to connect with a student or family member by phone was a point of frustration: "Our teachers are limited in what they can do when they're reaching out by phone, and they're not able to leave voicemails and not able to connect with anyone. You know their hands are tied at some point." When students and families did not answer the phone, teachers often had better luck getting responses to text messages (P2, P6, P8, P12, P14, P16). An executive leader (P2) said, "They can text a student using Google Voice. That was one way that we felt they could better connect with students in a language that's familiar to them right rather than an old-fashioned phone call." Similarly, a director of instruction (P15) expressed, "There are a fair number of students that will text our teachers but will never want to talk to them on a phone—freak out with the idea of calling the teacher. But they'll text you in a heartbeat." Another director of instruction admitted not wanting to answer unknown calls (P14): "I think more parents, and I'm one of them, don't answer phone calls to numbers [they] don't know. A lot of the outreach has shifted to texting." Teachers also emailed a family first to set up a time to talk over the phone (P14). When one mode of communication was unsuccessful, teachers tried to reach students through another mode to get a response (P2, P12, P15).

Nine leaders (43%) said that email and course messages sent through a program LMS were frequently used with students and families. At the start of the academic term, teachers sent

welcome messages to students to share information about themselves, their courses, and orientation processes (P7, P8, P13, P14). Two leaders shared that most communication from program leaders and teachers was text based (P12, P18). While used daily by teachers and leaders, text-based communication such as email was a challenging medium due to nuances in tone (P13, P18, P21). An executive leader (P18) explained the importance of carefully writing messages and accepting feedback:

We need to spend time being very thoughtful about the emails that we send. And email tone is a huge part. We call it Online Smile at program C. But we tell our staff, we tell our teachers, [and] I practice this myself—don't send snotty emails. Have someone check your email, and have someone check your tone. And accept feedback on your emails. That's a little thing. But that's an example of where we have to understand that for better or for worse, 80% of our interaction with our students, with our faculty, [and] with each other is going to be via email. So, we should work on—thoughtfully work on—making sure that that is always a good, positive, asset-building activity.

A recommended practice was working with a colleague to ensure that responses conveyed a positive tone. A director of instruction (P13) expressed the need for additional training on interpreting text-based communication and providing effective responses: “We’re working on it as an instructional staff. When I get an email that says *this*, what is my initial reaction? And then, what is my actual action going to be?” With an increasing number of messages going directly from families to teachers, this leader felt that teachers entering the profession might benefit from additional training on managing written communication.

Sixteen leaders (76%) mentioned using web-conferencing tools to engage students, connect to the content, and build community. In program F, teachers welcomed students in

required Zoom sessions before they could begin the course (P4, P8, P13). A director of instruction (P13) noted that teachers were given the flexibility to conduct welcome contacts in small groups or individually. Students also completed a questionnaire during the first contact, which helped teachers learn things such as students' favorite songs, sports teams, and hobbies that they could weave into future communication. The leadership team anticipated some pushback from the faculty on making these required first contacts when they were initially instituted (P8). However, teachers were receptive and credited an improvement in the connections they made with students as a result of this practice.

Teachers worked with students individually or in small groups during designated synchronous support hours each week (P1, P6, P7, P9, P12, P14, P15, P16, P17, P21). These content-related sessions were used to deliver and record a short lesson, to offer intervention support, or to answer questions about the course. Several programs had options for structured synchronous instruction through web-conferencing (P1, P2, P3, P4, P6, P8, P9, P12, P13, P14, P15, P16, P17, P20, P21, P22). Regular interaction through web-conferencing tools can boost student engagement (Schueler & West, 2022) and foster presence in the online classroom (Rothstein & Haar, 2020).

Nine leaders (43%) shared that communication and interaction during academic and nonacademic special events supported community building. In program E, students attended a monthly "cultural cafe" to learn about topics related to world languages and cultures, such as the Chinese tea ceremony or life in Jamaica (P17, P22). These sessions were open to students, teachers, and staff. A "Student Scoop Newsletter" was sent out to share updates on extracurricular opportunities through program E (P17). In program A, students, families, faculty, and staff were invited to attend a special "dollar admission" baseball game in the capital city

(P9): “[It was] an opportunity for kids from around the state to meet up together and do something fun.... Teachers from all over the state [came] in to meet those students face-to-face and have that interactive time with them.” Teachers in program F held spirit days in synchronous classes to make learning lighthearted and fun (P13). To celebrate 100 days of school, “everyone came dressed as if they were 100 years old, or they brought a filter.” In web-conferencing, filters superimposed an animated image over the participant. Some students participated in virtual clubs based on interest polls (P9, P14, P17, P21, P22). Examples included game design, reading, coding, world languages, and stock market clubs. Students also participated in state-level competitions (P7, P10, P14). A director of instruction (P14) proudly reported, “The coding club was amazing. They actually won a statewide competition, even though they had never met face to face.” The opportunity to participate in special events helped students bond around common interests and has contributed to building community (P14).

Finding 5 Summary. Frequent, positive communication with students and families using a variety of tools builds course community and promotes student engagement in state-level supplemental virtual programs. Responsive and encouraging communication with learners has also been shown to establish teaching presence in online courses (Akcaoglu & Akcaoglu, 2022; Borup et al., 2014; Gacs et al., 2020; Garrison et al., 2010; Jackson, 2017; Mullen, 2020a, 2021). Table 20 presents communication practices that build community. Communication with students was strongly supported by leaders from all six programs, whereas communicating with families was mentioned by leaders from five programs. Leaders from four programs shared that participation in special events contributed to community building. Table 21 displays the communication tools used to support student engagement and build community. More than half of the leaders noted that teachers used course tools, phone calls and texts, and web-conferencing

to strengthen individual relationships, engagement, and community. Fewer leaders mentioned a connection between text-based communication, such as discussions and emails, and student engagement or community. This suggests a potential avenue for future research comparing how text-based and verbal communication may contribute to the development of presence and community for K–12 learners.

Table 20*Communication Practices That Support Building Community, by Participant*

Practice	P 1	P 2	P 4	P 6	P 7	P 8	P 9	P 10	P 12	P 13	P 14	P 15	P 16	P 17	P 18	P 20	P 21	P 22
Communication with students	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	
Communication with families	X	X	X	X	X				X	X	X	X						
Special events				X	X		X	X		X	X			X			X	X

Table 21*Communication Tools That Support Building Community, by Participant*

Tool	P 1	P 2	P 3	P 4	P 6	P 7	P 8	P 9	P 10	P 12	P 13	P 14	P 15	P 16	P 17	P 18	P 19	P 20	P 21	P 22
Course tools		X	X	X	X				X	X	X		X	X	X			X	X	X
Discussion boards		X						X	X	X		X							X	
Phone calls and texts	X	X		X	X	X	X			X	X	X		X	X	X			X	
Emails and messages				X		X	X			X	X	X	X	X		X				
Web-conferencing	X	X	X	X	X	X	X	X			X	X	X		X	X	X	X	X	X

Finding 6

The need for teacher visibility and some student anonymity influences presence in the course community.

Analysis to Support Finding 6. The virtual learning environment, which is designed for participants to engage individually, meets seemingly contradictory needs for supporting both visibility and anonymity. Sixteen state-level supplemental virtual program leaders (76%) mentioned a need for teacher visibility and some student anonymity, which appeared to influence presence at the course level. Table 22 displays considerations for presence in the course community. Factors that influenced teacher visibility included (a) how teachers portrayed themselves within the course space and (b) how teachers interacted with learners through instruction. Factors that influenced student anonymity included (a) learner preferences and (b) camera usage in synchronous classes.

Thirteen leaders (62%) identified teacher visibility within the course community as a positive attribute. Teachers with a high social presence project their personality and empathy through interpersonal relationships and communication (Garrison et al., 2010). Teachers established social presence through welcome sessions with students (P4, P7, P8, P13). Two leaders emphasized that these personalized introductions were a way for teachers to share, “I’m a real person” (P8, P13). A director of instruction (P14) echoed a similar sentiment that teachers “[let] the students know that they are humans [by] showing a little bit of vulnerability and their own personality.” At the start of the academic term, teachers introduced themselves through short videos so that students could see and hear them (P2, P6, P10, P13, P21). An executive leader (P2) shared, “Teachers love using video, Loom, things like that. I think those are good strategies for teachers to use because [students] get to see your face, hear your voice, and see

your personality.” Teacher-created videos were a way for teachers to share who they are as individuals and connect students to the content. Being on camera during synchronous classes was another way teachers demonstrated their presence and engagement with students (P14).

Other instructional practices that amplified teacher visibility in online courses included interaction in discussions and regular communication in announcements. Teachers established themselves as visible participants in course discussions when they connected with students and guided learning (P2, P10, P14). Teachers also reinforced a visible presence at the course level through frequent announcements (P2, P6, P10, P16, P21, P22). An executive leader (P2) said, “A big piece of the teacher’s job is to establish their presence within the course, whether it’s through their course updates or their feedback.”

Similarly, a director of instruction (P12) defined *teacher visibility* in terms of leaving individualized instructional feedback for students on their work: “We require our teachers to have a visible presence in class. We require them to provide feedback—personalized and actionable feedback—within each unit. So that’s really the key thing, just making sure teachers are visible.” Leaders strongly supported the instructional practice of providing personalized feedback on assignments to connect with students, and connect students to the content (P2, P6, P7, P10, P12, P14, P15, P17, P18, P20, P21). Feedback on student work was text based, annotated, or provided through short, personalized videos (P6, P15). An executive leader (P18) emphasized the importance of rich, detailed feedback as a core instructional practice:

We say that feedback is the instruction in an e-learning model. If you’re just checking things off and putting “Good job!” on things, then you’re really not engaging the instructional piece of this like we need you to. Every assignment needs to have deep and rich feedback in it. There’s certainly a balance there, back and forth. When assignments

are formative, it probably needs [a] more detailed format than when you're doing the summative piece when you're just measuring overall progress.

A focus on guiding student learning through corrective feedback aligns to previous research (Barbour et al., 2018; Gacs et al., 2020; Hosler & Arend, 2012; Rothstein & Haar, 2020; Russell, 2020; Sanders & Lokey-Vega, 2020). A leader who worked closely with faculty (P21) shared that effective feedback followed a “sandwich model,” layering positive observations with recommendations for growth. This approach to providing specific and encouraging feedback establishes teaching presence and supports critical thinking (Hosler & Arend, 2012; Mullen, 2020a, 2021).

While leaders shared a need for teachers to be perceived as visible to their students, student anonymity emerged as a theme. Eight leaders (38%) mentioned the need for processes that supported some student anonymity in the virtual classroom. Leaders said that students enjoyed the anonymity that the online environment provided (P12, P17). A director of instruction (P12) said, “Some [students] love it for anonymity. They can just be themselves.” Another director of instruction (P7) mentioned that occasionally, students chose to learn online owing to challenges at their local school: “And we actually have many students who come and take courses with us because of difficulty in the face-to-face environment with bullying or feeling excluded, or other types of similar situations that have arisen for them.” Learning online granted students the power to choose how much of themselves they wanted to share. This leader (P7) continued, “Students choose how much anonymity they want to have. They choose how much they communicate. They cannot see one another, so they choose whether they put an actual photo of themselves as their profile picture or an avatar.” A virtual environment also offered a sense of normalcy to fragile students, wards of the state, or students awaiting trial (P4, P11). A

leader (P11) recalled, “And those students oftentimes will thrive in this environment simply because no one sees them. No one has any preconceived notions about what they look like and what they may or may not be able to do academically.” During the first focus group, a curriculum and design leader (P8) reiterated agreement with this leader (P11) that some anonymity can protect vulnerable students from stigmas: “I definitely agree on that. We have students who are incarcerated. And so we know that, but nobody else knows that. That's a good thing.” Teachers might never see a student’s face but only hear their voice and see their name in synchronous sessions. An executive leader (P4) explained that “learning online means educating differently” to account for individual situations.

Leaders described differing approaches to camera usage during synchronous instruction. Several leaders shared that they relied on teacher discretion for camera usage during synchronous lessons (P6, P8, P9, P17). One reason was that extensive camera usage throughout the day was draining (P6). A director of instruction (P13) noted that cameras were not a viable option for some students due to medical or other needs. Teachers had the option to work in a “focus-mode” setting in web-conferencing, so that students did not see one another (P8). This approach minimized distractions during whole-group instruction.

In contrast, students in the synchronous model through program F signed an agreement to be on camera during live sessions. It took time for them to adjust to being on camera (P13): “We find that at the beginning of a course that is very uncomfortable for students. We do see a lot of foreheads, eyebrows, and ceilings. As time goes on, though it becomes a more comfortable and regular thing.” Teachers relied on nonverbal cues from the cameras to guide instruction, and “the ability [for students] to hide in the virtual space” was a barrier to learning (P13). Rothstein and

Haar (2020) suggested that the lack of camera usage can negatively impact community building by reducing the visual cues used in interpersonal communication.

A benefit to the anonymity afforded in an online platform is that it removed “pre-existing stigmas” tied to a physical space or group (P13). A director of instruction (P17) related a story about a gifted language student who studied Chinese and Spanish and served as an online translator. This student was invited to lead a cultural cafe session for the program but had never been on camera. As the director was helping the student prepare:

I remember him [saying], “Most people wouldn’t give me the time of day if they saw me walking down the street.” And I couldn’t understand. We were talking about how to prepare for this session he was doing. And he turned on his camera. And, you know, the dark hoodie, tattoos, and things. It was just something that he was like, “You know, most people would look at this and [go] the other way.” But I mean, here’s this kid that is learning two other languages. And as a teenager, is translating. We were able to open up this world for him so that he could still be himself and do what he loves, even though the world would probably not let him do what he was doing because of the way he looked. He was actually doing a lot of [translating] virtually. And he [said], “I probably wouldn’t have had this opportunity, because they wouldn’t have given me the time of the day if they looked at me face to face.”

In this student’s case, the anonymity afforded by learning online opened up additional opportunities that may not have existed due to conscious or implicit bias in a different environment. Programs collected very limited demographic data on students, which meant “that there [was] less room for unintentional bias” (P7). Teachers did not know a student’s cultural

background unless they shared this information, and this lack of knowledge could be a challenge if a teacher unknowingly overstepped a cultural boundary (P13).

Finding 6 Summary. The need for teacher visibility and some student anonymity influences presence in the course community. This finding calls into question what it means to be *seen* in the online environment. Seemingly a paradox, visibility and anonymity in the online environment are not mutually exclusive. Table 22 presents considerations for presence in the course community by participant, and Table 23 displays the data by program.

Leaders from five programs described practices that demonstrated teacher visibility as being beneficial to students. Teacher visibility was established visually by creating videos and being on camera during synchronous instruction. Teacher visibility was also perceived through active communication in the course and personalized feedback to students. The concept of teacher visibility being expressed through how teachers interact and guide instruction in a course aligns with the CoI. According to Garrison et al. (2010), teachers may exhibit teaching and social presence through course facilitation, direct instruction, communication, and interpersonal relationships.

Leaders from four programs had considerations for supporting student anonymity to the extent possible within accepted program parameters. Students maintained control over how much they shared about themselves and how they interacted in the course community. In some cases, students were not physically visible to others in synchronous instruction. This finding suggests that a student's desire for anonymity within the course community does not affect their interpersonal relationship with the teacher. As also hinted, a perceived connection between some student anonymity and a reduction in bias or stigmas may enhance learners' experiences within the course community.

Table 22*Considerations for Presence in the Course Community, by Participant*

Consideration	P 1	P 2	P 4	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13	P 14	P 15	P 17	P 21	P 22
Teacher visibility	X	X	X	X	X	X	X	X		X	X	X	X		X	X
Student anonymity				X	X	X	X		X	X	X			X		

Table 23*Considerations for Presence in the Course Community, by Program*

Consideration	A	B	C	D	E	F
Teacher visibility	X	X		X	X	X
Student anonymity	X	X		X	X	X

Finding 7

Course design and delivery that support accessibility and usability facilitate an equitable learning environment for students in state-level supplemental virtual programs.

Analysis to Support Finding 7. Accessibility and usability are considerations in learning design that affect how students access and engage with online content (Baldwin et al., 2018; Bigatel & Edel-Malizia, 2018; Gacs et al., 2020). The NSQ (2019) contain five standards addressing *accessibility* and *usability* in course design and offered the following objective defining these two terms: “The course design reflects a commitment to accessibility so that all learners can access all content and activities and to usability so that all learners can easily navigate and interact with all course components.” In the context of this study, *accessibility* refers to the extent to which online course content and instruction are available to all learners, regardless of any disabilities. *Usability* refers to the ease with which a learner can navigate and engage with course tools. The data for this finding were analyzed using these definitions.

Eighteen state-level supplemental virtual program leaders (86%) from five programs identified accessibility as a barrier to equity in course design. Nine leaders shared that

accessibility was a particular concern for students with visual and auditory disabilities (P1, P3, P6, P7, P12, P14, P15, P17, P20, P22). An instructional designer (P22) recalled feeling frustrated when the administration at a rural school in the mountains initially paired a student with low vision and a classmate tasked with assisting in the online course. “They didn’t give [the student with a visual disability] a device. They didn’t do anything.” The students were moved to the library, where another challenge was inconsistent devices that affected being able to use assistive technology:

They’ll get access to the device that’s available that day. Today it may be a [Google] Chromebook. Tomorrow it may be a[n Apple] MacBook. The next day it may be an iPad. If you’re thinking of someone who’s using screen reading technology, there [are] too many controls with screen reading technology [that you are] trying to familiarize yourself with. [First using] JAWS, then switching over to VoiceOver or NVDA, and [going] back and forth between them. That does a disservice to the students.

Consistent access to assistive technology is a necessary support for students with visual or auditory disabilities. In programs A and E, leaders and instructional designers visited residential schools to work through accessibility issues with students and school staff (P1, P3, P6, P14, P16). An executive leader (P1) described the benefit of visiting schools to analyze course functionality: “Partnering with a teacher who’s trying to support [students] is helping us to step back and think. We may have met minimum accessibility requirements. Is the content truly accessible in a way to set that student up for success?” Site visits allowed program leaders to experience accessibility challenges alongside students so they could conceptualize how to resolve problems.

Tables 24 and 25 indicate a strong response from participants and programs supporting the finding that individual students' unmet needs to access content were a barrier to equity. Leaders from five programs said that accessibility issues impeded virtual learning. The next section presents an analysis of course design and instructional practices that facilitated an equitable learning environment.

Table 24

Individual Student Needs for Accessing Content as a Barrier to Virtual Learning, by Participant

Barrier to equity	P 1	P 2	P 3	P 4	P 6	P 7	P 8	P 10	P 12	P 13	P 14	P 15	P 16	P 17	P 19	P 20	P 21	P 22
Unmet individual student learning needs to access content	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Table 25

Individual Student Needs for Accessing Content as a Barrier to Virtual Learning, by Program

Barrier to equity	A	B	C	D	E	F
Unmet individual student learning needs to access content	X	X		X	X	X

Course Design and Delivery Practices. Twenty leaders (95%) shared course design and delivery practices that addressed usability and accessibility needs in order to facilitate an equitable learning environment. Tables 26 and 27 present practices that leaders implemented to resolve usability and accessibility issues for students. The results are displayed by participant and by program. Common practices to anticipate and work through accessibility issues included (a) developing courses according to the principles of UDL, (b) developing alternate versions of assessments, (c) developing interactive practice, (d) organizing courses with a consistent navigation and look for online courses, (e) chunking online content, and (f) resolving concerns in partnership with schools.

Leaders accounted for potential accessibility needs in course design practices. An executive leader (P2) shared the expectation that courses should be designed with accessibility in mind:

As far as equity of access, it should be expected that you can take a class without us having to put in the supports that you need before you can walk in the door. I always explain it to my team [that it] is like when you when you go to the grocery store. Whether you're walking or in a wheelchair, you should be able to get in the door. You shouldn't have to wait for them to come out and build the ramp for you. One expectation we have is that there shouldn't be equity issues caused by technology.

A curriculum and design leader (P16) mentioned an increase in the number of students with disabilities taking online courses as a reason that accessibility remained a priority in course design. Examples of accessibility support built into courses included alt-text on images (P16), closed captioning on video content (P4, P6, P16, P20, P22), and formatting that supported screen

readers (P1, P4, P7, P12, P22). A director of instruction (P15) confirmed that having basic accessibility tools built into courses was a necessary support for students.

Eighteen leaders (86%) described content development models that aligned to UDL principles. Based on the literature review, several researchers support course design practices that incorporate the UDL principles to assist students with disabilities (Borup & Archambault, 2019; Gacs et al., 2020; Martin et al., 2019; Stella & Corry, 2017). These principles refer to presenting content using (a) multiple means of representation, (b) multiple means of action and expression, and (c) multiple means of engagement (CAST, 2018). Simplified, the principles address how content is presented to students, how students demonstrate their content knowledge, and how students engage with the content. Course design that subscribes to the UDL principles reduces accessibility barriers for all students and may be viewed as a benefit to both learners with and without disabilities (Borup & Archambault, 2019)

Leaders shared that virtual program course design incorporated multiple means of presenting course content to students through text, videos, audio files, and interactive design tools such as CourseArc or H5P (P1, P2, P3, P8, P13, P16, P18, P20, P21, P22). Using transcripts reinforced audio-, video-, and image-based content for students with accessibility needs and provided an additional means of accessing the material (P1, P20, P22). A curriculum and design leader (P3) added that study guides had been developed to reinforce lesson concepts for all students.

Courses offered multiple means for students to demonstrate their content knowledge through discussions, written work, videos, projects, presentations, quizzes, or tests (P2, P7, P13, P16). Two leaders mentioned giving students choices about the format for submitting work (P13, P16). Four leaders noted that courses included alternative assessments to support varied learner

needs for accommodations and modifications (P1, P3, P8, P21). A curriculum and design leader explained how the alternate versions of assessments were created: “Every course when it’s designed has a version 0, which is the main version, [a] version A, and [a] version B. And versions A and B represent different tiers of modification or accommodation.” Alternate versions of assessments incorporated a reduction in the number of questions or answer choices. Assessments also offered a “paper and pencil” option for students to handwrite their work (P8).

Leaders described options for students to engage in coursework. Students collaborated with peers on shared documents (P13) and participated in small-group work during synchronous instruction (P9, P13, P19, P21). Additional support built into courses for individual student engagement included remediation modules to scaffold learning (P1, P15, P20) and ungraded formative practice through interactives (P1, P2, P3, P4, P7, P8, P9, P10, P12, P13, P16, P18, P21, P22). An example of interactive practice included basic self-check question sets to assess understanding of a reading or video (P1, P2, P7, P12, P21, P22). Self-check activities in an expandable accordion format also walked students through multiple-step problems in advanced mathematics courses (P8). A director of instruction (P12) shared that interactives incorporating “gamification” engaged students with the content:

[In] our forensics classes, kids are actually embedded within a crime scene. It’s like Clue. They have the [content] background, understanding, [and] knowledge. [In the interactive scene] it’s up to them to pick whichever path they think is most appropriate and then justify it. It’s not just a game, but we’re incorporating the content and their justification for the answers.

Two benefits to interactive practice for students were the automated feedback that scaffolded learning (P4, P12) and a low-risk scenario for students to test their knowledge (P7, P8, P13).

A streamlined course organization and layout supported usability and accessibility. Seven leaders (33%) mentioned design practices that supported usability through course navigation and appearance. Course design templates provided consistency across content areas during the development process (P3, P4, P18, P20). A predictable course navigation was achieved through established module and lesson structures (P1, P3, P13) and a “unified homepage” design in all courses (P13). Consistent navigation patterns across courses created a familiar look and feel, which helped students know where to go in their lessons (P13). Four leaders (19%) identified chunking of content as a course design practice that supported usability and accessibility. Chunking, or breaking down content into smaller sections of text and media, was a part of course design using modules and lessons (P1, P2, P3, P16). Leaders explained that the goal of chunking was to simplify online content by presenting it in “manageable pieces” (P1) or “digestible chunks” (P13).

Eleven leaders (52%) shared that they worked in partnership with local schools to support accessibility. A director of instruction (P6) recalled working with students with visual disabilities in Advanced Placement (AP) math courses. During a site visit, the program team learned that the amount of text on course pages, particularly the text headings, was distracting from the concepts. This discovery prompted adjusting the content available on lesson pages to focus only on the core ideas. The director (P6) explained, “For that course, we took out a lot of the headings and a lot of the things that didn’t matter for understanding the material. We were able pare it down to just what the students needed.” Leaders worked closely with the supporting classroom teacher to share lesson documents for translation into braille. The director (P6) emphasized partnering with the school to resolve the issue: “It took a lot of teamwork and collaboration. But it was something that we didn’t know was a problem until we were in the room.” Screen readers and

braille translation tools presented specific challenges for math content, such as not reading fractions or mathematical language correctly (P6, P15, P20). Working closely with residential schools to resolve accessibility issues informed modifications to course design practices in anticipation of students' needs in future courses (P14, P16, P17).

A curriculum and design leader (P16) expressed that course design processes would continue to evolve to meet learners' needs: "I would never say that our courses are perfect. I don't think there is perfection. You're certainly working towards including all, and making [content] as inclusive, as accessible, [and] as usable as you can, while still meeting the standards." Adopting tools that specifically supported accessibility in course design, such as "CIDI Labs," helped to identify needed modifications (P1). When there were accessibility challenges, teachers contacted the curriculum team to adjust the courses and ensure that students could access the content (P15, P20).

Finding 7 Summary. Course design and delivery that support accessibility and usability facilitate an equitable learning environment for students in state-level supplemental virtual programs. Tables 26 and 27 present practices that leaders used to ensure that students can access course content and engage in instruction. Leaders from five programs strongly supported the use of UDL principles to guide course development and instruction. Incorporating interactives in lesson design was a widely reported course design practice across all six programs. A smaller number of leaders also mentioned course navigation, providing alternative assessments, and chunking content as practices that support accessibility and usability. Finally, leaders from four programs shared that working in partnership with schools was a practice used to resolve accessibility concerns for students. Accessibility was not mentioned as a barrier to equity for program C. One possibility for this difference is that nearly two-thirds of program C's content is

purchased from vendors and adapted at the program level (P18). Researchers in higher education recommended that teachers receive training on accessibility (An, 2021; Gacs et al., 2020; Martin et al., 2019). Although outside the scope of this study, two leaders from programs F and E (P13, P16) mentioned providing accessibility training for their faculty, and these efforts were focused on teachers participating in content development. Learning more about how prospective K–12 teachers and current faculty are prepared to meet learners’ needs for accessibility in course design and instruction is a potential area for future research.

Table 26

Course Design and Delivery Practices That Support Accessibility and Usability, by Participant

Practice	P 1	P 2	P 3	P 4	P 6	P 7	P 8	P 9	P 10	P 12	P 13	P 14	P 15	P 16	P 17	P 18	P 19	P 20	P 21	P 22
Course development using UDL principles	X	X	X	X	X	X	X		X	X	X	X	X	X	X		X	X	X	X
Alternate versions of assessments	X		X				X													X
Interactive practice	X	X	X	X		X	X	X		X	X			X		X			X	X
Consistent navigation and look		X	X	X					X		X		X	X						
Chunking of content	X	X									X			X						
Partnership with schools to resolve issues	X		X		X					X		X	X	X	X			X	X	X

Table 27

Course Design and Delivery Practices That Support Accessibility and Usability, by Program

Practice	A	B	C	D	E	F
Course development using UDL principles	X	X		X	X	X
Alternate versions of assessments	X				X	X
Interactive practice	X	X	X	X	X	X
Consistent navigation and look		X		X	X	X
Modifications to course design	X	X		X	X	X
Chunking of content		X			X	X
Partnership with schools to resolve issues	X	X		X	X	

Finding 8

Cultural representation in online courses and diversity among the faculty help students connect with the content in state-level supplemental virtual programs.

Analysis to Support Finding 8. Within the context of this study, cultural representation refers to how communities are shown in images, videos, and text in courses. Fourteen state-level supplemental virtual program leaders (67%) from six programs identified a lack of cultural representation as a barrier to equity in course design and instruction. Tables 28 and 29 display the participant and program data supporting this finding.

A lack of cultural representation may be determined in course design by limited diversity presented in the course images or few diverse perspectives provided in text examples. Thirteen leaders identified a lack of representation in online courses as a barrier to equity in virtual learning (P2, P3, P4, P7, P8, P9, P13, P14, P15, P16, P18, P19, P22). Accounting for how to represent a diverse state population in course content was shared as a consideration in course design (P20). A curriculum and design leader (P3) identified representation and accounting for students' perspectives as barriers to equity in course design. Three other leaders (P16, P19, P20) concurred that cultural representation in course design was equivalent to "students being able to see themselves in the content." An executive leader (P18) credited student survey results with indicating that continued thought and work needed to be put toward building a culturally inclusive community across content areas:

We still have a way to go so that students feel respected in their cultural identity. [It's] not that we disrespect them. It's just that we need to spend more time thinking about how we provide that environment for students to feel like they can be completely themselves.

This leader gave an example of a math class, where thoughtfully creating opportunities for students to identify with the content seemed more of a challenge than in other content areas.

In staffing, diversity among the leaders, staff, and faculty working in the program community emerged as a theme. Leaders identified a lack of diversity in program staffing as a barrier to equity in virtual learning (P3, P13, P14, P15, P16, P20). Two directors of instruction (P13, P14) shared that their program faculty were “not very diverse.” A director of curriculum (P16) said the goal of having a faculty that represented the student population was difficult to attain with a limited applicant pool: “You want your teaching population to be just as diverse as your student population. That can be a challenge as you’re hiring teachers because you could only hire who applies.” Another concern was that when hiring a virtual employee, it was difficult to know someone’s cultural background unless they explicitly revealed this information (P16).

Leaders from six programs identified a lack of cultural representation as a barrier to virtual learning. Tables 28 and 29 present data for participant responses, both individually and by program. The next section presents an analysis of the practices leaders discussed that increase representation in online courses and instruction.

Table 28

Lack of Cultural Representation as a Barrier to Virtual Learning, by Participant

Barrier	P 2	P 3	P 4	P 7	P 8	P 9	P 13	P 14	P 15	P 16	P 18	P 19	P 20	P 22
Lack of representation	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Table 29

Lack of Cultural Representation as a Barrier to Virtual Learning, by Program

Barrier	A	B	C	D	E	F
Lack of representation	X	X	X	X	X	X

Representation in Course Design and Staffing. Fifteen leaders (71%) said that they account for representation of different cultures and communities through course design practices. A director of instruction (P7) affirmed that the curriculum team considered representation during the course development process: “Our courses are designed in such a way that they are inclusive for students of different ability levels [and] different backgrounds.” An executive leader (P2) recalled that during each course development process, the curriculum team discussed details such as including images that represented a variety of backgrounds. In computer science or STEM courses, for example, the team would look for images of girls or people of color “so that [the image] doesn’t continue to reinforce [a] stereotype.” A director of instruction (P14) mentioned that finding photographic representation of women, people of racial or ethnic minority groups, and people with disabilities was difficult 15 years ago, but that access to diverse stock images has improved since. In an effort to help teachers connect to the course, the curriculum team at program E prioritized showing “different teachers in real settings in the course” rather than using “third-party content” (P20, P22). Courses that include accurate images and perspectives of diverse groups increase inclusion and students’ ability to see themselves in the content (Kelly & Zakrajsek, 2021).

A focus on representation in online courses helped students connect to the content (P2, P9, P14, P15, P16, P21). A curriculum and design leader (P16) expressed, “You have to really think about your audience. You’ve got to write content for all students and try to help them find ways to connect to the content.” This same leader reported that the team looked for a balance between the “teacher voice” conveyed throughout each course and the examples used in lessons to ensure that “they’re not writing the content in a way that’s going to create a barrier for a student.” This process was intended to ensure that the examples provided were relatable to

students taking the course. Three leaders echoed the importance of representing a variety of cultural backgrounds with the names and examples presented in courses (P2, P4, P20). Using different pronouns in course examples was another practice to incorporate inclusive language (P4). An instructional designer (P20) shared that careful consideration was given to including reading selections in English courses that “[met] the interest of diverse learners.” Kumi-Yeboah et al. (2018) found that minority students related better to literature and reading materials from diverse cultures.

Multiple leaders reported the need to be thoughtful about representation in course design and instruction. According to an executive leader (P2), being thoughtful meant not always going with one’s first idea as that typically followed one’s bias. Another executive leader (P18) described how educators in program C needed to be thoughtful about how they represented indigenous cultures in course content and instruction across all content areas:

[State C] has a law that enshrines in statute what is actually in our state constitution, that we are obligated to make sure that instruction is culturally sensitive and relevant to indigenous populations. That is something that [is] never done. It’s something you want to constantly revisit, to make sure that you’re being thoughtful about development. The way the law is interpreted in state C is not just where the obvious implications are, like a social studies class or an English class with literature, but also [seeing] where that could fit into other parts of the curriculum.

The challenge and responsibility of educators in state C have been to take a respectful and intentional approach to representing Indigenous cultures in every curriculum. A director of instruction (P14) shared an example of how the fine arts department revised an assignment that few students were completing. After taking a careful look at the assignment, the teachers

determined that edits were needed so that the activity could be more culturally inclusive and help students relate to the task:

The [department] met, and they realized that the assignment was very focused on a particular culture. Art from every culture is really different. [By] opening up the language of the assignment slightly so that it could apply to [other backgrounds], it increased participation.

By changing the language to be more inclusive, the teachers were able to adapt the assignment and help students connect to the content.

To strengthen overall instructional practices, program E provided training on culturally responsive teaching practices (P1). A director of instruction (P14) said that professional learning helped teachers increase their cultural awareness: “If the teacher pool itself is naturally not very diverse, professional learning needs to [help] build [that] awareness.” Teachers were encouraged to be thoughtful and aware of the examples they provided during course instruction (P16).

A consideration for state-level supplemental virtual programs is ensuring cultural representation that reflects the unique population of the state. According to an executive leader (P2), “The challenge [of] being statewide is that our community is not one community. Our community is every community in the state.” The leader explained that while a school’s identity was tied to the local community, representation in a statewide program would consider different regions within the state. An example was provided for two distinct communities within the state: “Eastern state B and northern state B are not the same. Being mindful if I’ve got an eastern state B kid and northern state B kid in this class, how can I be relevant to both through examples?” A curriculum and design leader (P8) shared that representation in courses needed to include examples for both urban and rural communities. Echoing a similar sentiment during the first

focus group, another curriculum and design leader (P9) said, “Any ways that we can connect what they’re learning to something that’s familiar to them—industry in our area, things that students are interested in—it really just takes our leveling of engagement further in courses.” Making courses relevant to students and relevant to the state improved student interest and engagement with the content (P2, P9).

Seven leaders (33%) reported efforts to account for representation of diverse backgrounds in the leadership, faculty, and staff. Leaders indicated the need for faculty and content developers to represent diverse backgrounds (P3, P13, P14, P16, P18, P20). A curriculum and design leader (P3) acknowledged the challenge of recruiting a diverse staff: “In online learning and course design, particularly, we face similar challenges as the tech world in [terms of] representation.” This leader also expressed the need for a diverse leadership team in order to relate to different communities around the state: “We can do perception surveys all day long to understand a community that’s different from our own. Until we have those groups as part of the leadership, I don’t know that we will make a lot of headway.” A director of instruction (P15) credited a culturally diverse full-time staff with prioritizing recruitment efforts to hire teachers that were representative of the state population. An instructional designer (P20) concurred that deliberate efforts to increase cultural representation among the faculty enhanced instruction through exposure to “multiple backgrounds and multiple perspectives.”

Finding 8 Summary. Cultural representation in online courses and diversity among the faculty help students connect with the content in state-level supplemental virtual programs. Tables 30 and 31 present approaches to increase representation in content design and staffing. Leaders from all six programs described practices that supported cultural representation in course design. Four leaders from programs A, B, C and F shared course design approaches that

considered state-specific communities. Leaders from programs A, C, E, and F indicated support for recruiting a diverse faculty and staff that was representative of communities around the state. Cultural representation in courses and instruction helps to engage students and connect them to the teacher and the content. An executive leader (P2) summed up the benefits of making content culturally relevant to students: “If you can do it, you’re going to create relevant content that kids connect with, and they’re going to have more successful learning experiences.” This finding aligns with research from the literature review supporting the benefits of a culturally inclusive course community for students of diverse backgrounds (Kumi-Yeboah et al., 2018; NSQ, 2019; Rothstein & Haar, 2020).

Table 30

Approaches to Increase Representation in Content Design and Staffing, by Participant

Approach	P 1	P 2	P 3	P 6	P 7	P 8	P 12	P 13	P 14	P 15	P 16	P 17	P 18	P 19	P 20	P 21
Approaches to increase representation in course design and instruction	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
Approaches to increase representation in faculty and staff			X					X	X	X	X		X		X	

Table 31

Approaches to Increase Representation in Content Design and Staffing, by Program

Approach	A	B	C	D	E	F
Approaches to increase representation in course design and instruction	X	X	X	X	X	X
Approaches to increase representation in faculty and staff	X		X		X	X

Finding 9

Leaders and faculty in state-level supplemental virtual programs partner with schools and the community to navigate limited internet connectivity.

Analysis to Support Finding 9. Connectivity, or access to the internet, is an essential factor in facilitating online learning. Thirteen leaders (62%) identified limited connectivity as a barrier to virtual learning. Several leaders credited the pandemic with exposing the lack of access to high-speed broadband connections in their states (P2, P3, P4, P16). An executive leader (P2) compared the pandemic years to “the wild West” with unpredictable disparities in levels of access to the internet: “It was not as equitable once kids were forced onto what they had available at home.” Despite efforts in the state to expand access since the pandemic, “we know there [are] still some families that don’t [have access to the internet] at home, for whatever reason” (P2). Another leader (P3) said, “The pandemic really revealed here, and I think everywhere in the United States, that broadband access is not equitable.” Two leaders described limited access to the internet simply as “a barrier” (P4, P16).

Inconsistent access to the internet, or a lack of connectivity, is a reality for students and families in rural areas. Six leaders (P2, P7, P9, P11, P13, P18) noted that limited connectivity in rural areas was a challenge. While an executive leader (P2) shared that internet access in the state was “pretty decent,” some areas required a satellite to connect to the internet. Two leaders in the first focus group (P9, P11) agreed that while broadband infrastructure had improved since the pandemic, internet access remained an issue in rural areas. A curriculum and design leader (P9) described the lack of connectivity in rural areas as a long-term problem: “About 96% of the schools that we serve around the state are considered rural schools. One of the biggest barriers that we’ve experienced is [a lack of] connectivity. That has been a huge challenge for us over the years.” An executive leader (P18) expressed that internet unavailability in the home was related to both socioeconomic status and geography:

We have a relatively high percentage of students compared to other states that not only don't have broadband in their home, but they live a half mile from a good cell signal. The notion of trying to make sure that everyone has at least a basic, level playing field to access distance learning can be a real challenge.

Even with a boost to broadband infrastructure in state C since the pandemic, connectivity has remained an equity issue in very rural areas. In program F, a director of instruction (P13) said that students in rural areas without “a regular strong internet connection” typically did not choose to take synchronous classes, unlike their peers from urban or suburban areas. This choice, based on connectivity, limited opportunities for rural students to interact with their teachers in real time. Similarly, Ball (2022) found that synchronous instructional models, where learners were expected to meet at a specific time, exacerbated inequity for students with slow internet.

Two leaders from programs A and F recalled that teachers living in rural areas have difficulty accessing reliable internet (P9, P13). A director of instruction (P13) mentioned, “We do have teachers as far as 3 hours north to the top of our state and out in the east and west that are in more rural areas. And sometimes connectivity can be a challenge.” Another leader (P9) described the “struggle with connectivity” for teachers and students in rural areas, which was problematic because the program extensively serves that population.

Limited connectivity was found to be a barrier to online learning in state-level supplemental virtual programs, particularly in rural areas. Tables 32 and 33 show leaders' responses, which identified limited connectivity as a barrier across the state, for both students and teachers. The next section presents an analysis of the varied approaches leaders use to address connectivity issues.

Table 32*Limited Connectivity as a Barrier to Virtual Learning, by Participant*

Barrier	P 2	P 3	P 4	P 7	P 9	P 10	P 11	P 13	P 15	P 16	P 18	P 19	P 21
Limited connectivity across the state	X	X	X	X	X	X	X	X	X	X	X	X	X
Students with limited connectivity	X		X			X		X	X	X	X	X	
Teachers with limited connectivity					X			X					

Table 33*Limited Connectivity as a Barrier to Virtual Learning, by Participant*

Barrier	A	B	C	D	E	F
Limited connectivity across the state	X	X	X	X	X	X
Students with limited connectivity		X	X	X	X	X
Teachers with limited connectivity	X					X

Approaches to Address Connectivity Issues. Leaders shared different perspectives regarding limited connectivity. Eight leaders (38%) noted that a state investment in broadband since the pandemic had improved overall connectivity in the state. Leaders credited the Elementary and Secondary School Emergency Relief Fund (ESSER) and other grants as essential to helping schools improve internet access (P9, P11, P19): “Broadband to the schools has either doubled or tripled since the pandemic” (P19). A curriculum and design leader (P16) said that their program had seen a decrease in connectivity issues since the pandemic-era investments: “There’s been [a] greater effort to ensure that there’s high-quality, high-speed internet in our more rural areas. The majority of those students take courses from school. Now that they’re back in school, that’s not as much of a problem.” An executive leader (P18) said that although federal money to improve access to high-speed internet had driven improvement, a gap still existed: “The money that’s going into broadband helps with that. State C has received a lot of money in

the last 3 years to help deal with that equity gap in access. But it's still pretty real." Since connectivity relies on the state and community infrastructure, leaders have limited solutions available when students have trouble with accessing the internet.

State-level supplemental virtual program leaders rely on local schools and community resources to support connectivity for students. Five leaders shared that students have consistent high-speed internet in schools (P3, P15, P16, P19, P21). Three leaders reported that students taking classes through state-level supplemental programs met in school computer labs to complete their work, which provided consistent access to both internet and necessary devices (P15, P16, P19). On the other hand, several leaders shared that there seemed to be more students learning from home than in the past (P1, P3, P4, P7, P16). Leaders described approaches to work around connectivity issues for students learning from home, which included assisting students with identifying community resources, such as local libraries, to access the internet (P11, P15) and using school-issued mobile hotspots at home (P13, P19). A director of instruction (P15) explained their program's partnership with school districts and the community: "We don't provide computers. We don't provide internet. But we have an outreach and support team within program E that really helps partner with our schools to brainstorm and share how other districts have had success with community partners" (P15). A partnership approach with schools was used to assist students working through connectivity issues.

Another option that leaders in some programs explored using was offline content that did not require internet access. Four leaders remarked that they had attempted to provide alternate or offline versions of content with varying degrees of success (P3, P10, P15, P20). During the pandemic, leaders in programs A and E explored options for offline versions of content that could be downloaded and accessed on student devices (P3, P20). A curriculum and design leader

(P3) said, “[We] quickly determined that was not a viable long-term solution. The solution is to get access even at home to these students.” A director of instruction (P15) said they worked with the program curriculum team to download materials such as transcripts, videos, and documents for students who were unable to work online. Another leader (P10) recalled that students who were unable to attend synchronous sessions depended on downloading and watching lesson recordings. Alternate formats of learning materials provided options for students with limited access to the internet, but they were not intended for long-term use.

Finding 9 Summary. Leaders and faculty in state-level supplemental virtual programs partner with schools and the community to navigate limited internet connectivity. The pandemic exposed the inequity of state and community infrastructure, such as reliable broadband access to learners (Brinkmann et al., 2021; Cash et al., 2020). Gan and Sun (2021) called for support from public and private sectors, and they suggested that long-term solutions to barriers of slow or no internet would require government support. Tables 34 and 35 present approaches to address limited connectivity for students, displayed by participant and program. Leaders in all six state-level supplemental virtual programs credited federal funding with helping to improve high-speed internet access. Several leaders acknowledged, however, that connectivity remained a concern, particularly in rural areas. Although programs served students with limited access to high-speed internet, there was no broad consensus about how to address this challenge. Leaders and teachers in state-level supplemental programs have relied on school partnerships and community structures to support students, and solutions depended on individual circumstances. This finding suggests that work remains to be done to ensure that virtual learners in the United States, and especially from rural areas, have equal access to the internet.

Table 34*Approaches to Address Limited Connectivity for Learners, by Participant*

Approach	P 2	P 3	P 9	P 10	P 11	P 13	P 15	P 16	P 18	P 19	P 20	P 21
State investment in broadband	X		X		X	X		X	X	X		X
High-speed internet at schools		X					X	X		X		X
Work around connectivity issues		X			X	X	X					
Alternate or offline materials		X		X			X				X	

Table 35*Approaches to Address Limited Connectivity for Learners, by Program*

Approach	A	B	C	D	E	F
State investment in broadband	X	X	X	X	X	X
High-speed internet at schools	X			X	X	
Work around connectivity issues	X			X	X	X
Alternate or offline materials	X			X	X	

Finding 10

Leaders and faculty in state-level supplemental virtual programs address device and technology-related barriers to learning through course design approaches and partnerships with schools.

Analysis to Support Finding 10. A benefit of pandemic funding to schools was an increased investment in school-issued devices provided to students (Brinkmann et al., 2021; Cash et al., 2020). Fifteen leaders (71%) reported that school-issued devices were often limited or outdated. A director of instruction (P13) noted that students experienced issues with both hardware and software that created barriers to learning. Supporting a variety of devices was also a challenge: “The school provides all of the devices. That’s a varying target to make sure that we

are supporting all browsers and all devices as best we can. We give recommendations, but ultimately the school [is] providing that device.”

Device limitations presented substantial barriers to students in accessing online content (P4, P22). An executive leader (P18) shared, “Technology has always been an access issue from the standpoint of we strongly believe that if you’re taking an online course, you need a laptop or a desktop computer and you can pull it off.” Students were most often issued Chromebooks (P2, P4, P7, P8, P9, P11, P16, P7, P20, P22), which was an affordable option for school districts (P2, P20). Although widely used, Chromebooks presented some limitations for online learning. One leader explained, “[Students] can’t download any kind of software” (P7). Two leaders said that students needed devices other than their school-issued Chromebooks to download Python programming software for their computer science and career and technical education courses (P8, P17). Communication between the virtual program and school was essential to ensure that students had the devices needed for their coursework. Three other leaders presented unique challenges they had encountered. An executive leader (P4) gave the example of an outdated Chromebook that would not display graphs in an online math class. Another leader (P11) recalled a group of students who could not complete required AP assignments because their Chromebooks were unable to access the software. Instead of using the school-issued devices, students went to the local library to complete their work on public desktops. An instructional designer (P22) reported that Chromebooks were often insufficient for students’ technology needs, particularly regarding assistive technology.

Leaders said that using tablets was insufficient to fully access online lessons and assessments (P7, P8, P9, P17, P18). A curriculum and design leader (P8) described difficulties with interactive software functioning properly on iPads. Students experienced problems using

iPads when test security software required by program A did not function (P9). This led to a shift in program practice in which the program was no longer able to recommend iPads as a supported device.

Another technology-related barrier involved firewalls that blocked content. A director of instruction (P6) said that some schools put up firewalls blocking access to the program's LMS:

We have run into certain schools now that have put a firewall up against [accessing the virtual program]. [At] some of our charter and private schools, students can't access the course during the day at all. They have a block of time at school to work on the course.

They just can't access the course, which is super frustrating for the student.

Other leaders mentioned that external tools such as Google tools (P8, P21) or YouTube (P21, P22) were frequently blocked. Restrictions to YouTube content prevented students from accessing embedded educational materials housed on that platform. In some cases, students had limited access to online content due to their circumstances. For example, external internet content was blocked for students learning from a juvenile detention facility (P3).

Leaders identified limitations with school-issued devices and content blocking as barriers to virtual learning. During the first focus group, three leaders (P8, P9, P11) agreed with one another that Chromebooks and tablets presented challenges for students accessing online content. Table 36 presents the data by participant, and Table 37 presents the data by program. Fifteen leaders from across six programs said that device limitations were an issue for students being able to access content, while five leaders from three programs identified firewalls that blocked course content as a barrier. The next section presents an analysis of the varied approaches leaders use to address technology barriers related to devices.

Table 36

Limitations With School-Issued Devices as a Barrier to Virtual Learning, by Participant

Barrier	P 1	P 2	P 3	P 4	P 6	P 7	P 8	P 9	P 11	P 13	P 16	P 17	P 18	P 20	P 21	P 22
School-issued devices are limited	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
Content is blocked on school device or due to a firewall			X	X	X		X									X

Table 37

Limitations With School-Issued Devices as a Barrier to Virtual Learning, by Program

Approach	A	B	C	D	E	F
School-issued devices are limited	X	X	X	X	X	X
Content is blocked on a school device or due to a firewall	X				X	X

Approaches to Address Technology Barriers. A leading cause of attrition in online learning is confusion with the course technology (Barbour et al., 2018; Goertler & Gacs, 2018). Difficulty viewing course components or being unable to use course tools on devices leads to students' confusion and frustration. Leaders identified two technology-related barriers—limitations to school-issued devices and content blocking—which impeded students' access to their online courses. The approaches that leaders shared to address these technology barriers varied.

Leaders approached course design with the students' devices in mind. Eight leaders (38%) mentioned that a course design practice was to format content while considering how it would function for students on a basic device. An executive leader (P2) described this approach as “building with the lowest level of access in mind.” Knowing that most schools in the state were adopting Chromebooks meant that program content needed to be functional on those devices (P2, P20). A curriculum and design leader (P16) said that downloadable documents became “a big consideration in design” because word-processing software could not be loaded on Chromebooks. This caused a shift to using Google tools for word processing, which was viewed to be more frequently available to students.

Courses were designed with multiple ways to access content and submit work. A curriculum and design leader (P8) explained the challenge of resolving conflicting capabilities between software and devices: “Google is a big thing, and they’ll have Chromebooks, [which means] they can’t have Microsoft Word. Then school districts block Google from [external providers], even though we ask them to whitelist us.” Permissions for technology were determined at the local district levels, which varied across the state. A curriculum and design

leader (P21) mentioned how differing local school permissions were considered during the course design process:

We're supplemental. Since we've got kids at 250 schools around the state, we've got to be very careful with how we design [courses]. We know some [students] aren't going to be able to access certain things. We try to make sure to design around that.

The curriculum team determined that having options for the types of tools used in course activities was the best approach to designing for a large school population. Five leaders echoed similar design approaches to offer multiple formats for activities so that students were not limited by the software or devices issued by the school (P4, P7, P8, P13, P21).

In some cases, a flexible course design was not enough to ensure access to content on their school-issued devices. Leaders reported that they worked through technology issues in partnership with schools and students, especially when a specific type of device was needed to access course content (P8, P16, P17). A curriculum and design leader (P8) said, "More of our limitation is [for] some [computer science] courses; we can't design for [options] because their device won't allow it." When content was blocked due to firewalls or device restrictions, six leaders explained that they worked directly with the schools to make adjustments (P3, P6, P8, P20, P21, P22). In the second focus group, leaders (P21, P22) concurred that alternative tools such as Kaltura and MyVideoSpot ensured that video content could be accessed. Limiting the use of external links within a course helped avoid potential issues with firewalls, and this was the primary reason for courses to be as all-inclusive as possible (P21). Occasionally, working with schools requires a specialized solution. A curriculum and design leader (P3) provided examples of special situations where students were taking online courses but were not permitted to connect to the external internet. When working with students in juvenile detention, the curriculum team

at program A worked closely with the facility to find solutions for the students to be able to complete research for an English paper. After exploring several options, the team was able to secure access to an online resource database that could be restricted according to the facility’s needs.

Finding 10 Summary. Leaders and faculty in state-level supplemental virtual programs address device and technology-related barriers to learning through course design approaches and partnerships with schools. An analysis of the data has shown that device-related issues hinder learning for students in virtual programs. Tienken (2022) remarked, “Simply providing internet access and a complementary device will not bring educational equity to remote learning” (p. 152). Sixteen leaders identified limitations with school-issued devices and firewalls as barriers to equity in state-level supplemental virtual programs. Table 38 presents the approaches used by leaders to navigate device-related technology barriers. Leaders resolved these challenges by formatting course materials to function on a variety of student devices and by working in partnership with schools to resolve access problems.

Table 38

Solutions When Working With School-Issued Devices

Solution	P 2	P 3	P 4	P 6	P 7	P 8	P 9	P 13	P 16	P 17	P 20	P 21	P 22
Format courses with student devices in mind	X		X		X	X	X	X	X		X	X	
Work through device and technology issues with individual schools		X		X		X	X			X	X	X	X

Finding 11

Virtual program leaders prepare students for online learning and address gaps in knowledge through a personalized approach to instruction.

Analysis to Support Finding 11. Preparation for online learning is a consideration for student success in a virtual environment. A lack of learner preparation can cause anxiety about the learning platform, which researchers have shown leads to attrition (Goertler & Gacs, 2018; Rothstein & Haar, 2020; Russell, 2020). Eleven leaders (52%) identified a lack of readiness to learn online as a barrier to virtual learning. Common factors that influenced learners' readiness for online learning included their (a) technical skill set, (b) foundation in the content area, (c) organizational skills, and (d) primary language of communication.

A student's individual readiness to learn online is a barrier to virtual learning (P3, P4, P6, P11, P12, P13, P14, P15, P18, P21, P22). Students taking online classes may have a limited technical skill set (P6, P11, P12). A director of instruction (P6) shared that math students who were accustomed to handwriting their work were not prepared to do mathematics in Google documents or to upload their work online: "We've got some students who are struggling in math. Not only are they trying to overcome the math part of it, they're also having to overcome the technical aspect of it, which is also a roadblock." Two leaders shared that not knowing how to navigate the platform or submit work was an initial barrier to online learning (P11, P12).

A student's foundation in the content area is another consideration for their readiness to learn online. Online courses in the state-level supplemental model are developed according to the state standards and are delivered to teachers as a set package (see Finding 3). For this reason, students not reading at grade level or who may not have adequate prerequisite knowledge of the content area may struggle with the rigor (P3, P4, P6, P12, P13). A curriculum and design leader (P3) reported, "We have some districts in state A that may have not had a math teacher for several years in a row. And now you have students coming in, and they are really behind." The issue of chronic teacher shortages in struggling districts over multiple years was echoed by a

director of instruction in program E (P6): “That was a struggle with [a] district, because this is the second or third year they haven’t had a teacher for math [at] one middle school.” Students enrolled in online courses without the benefit of previous instruction with a licensed teacher over multiple years were put at a disadvantage with regard to being able to work at grade level. Both leaders reported that the districts without licensed math teachers were impoverished (P3, P6).

Limited organizational skills, a lack of motivation, or an overreliance on a teacher to guide learning affected individual readiness to learn. Students have not developed the mindset or personal organizational skills to work in a highly flexible learning environment (Borup et al., 2020; Zhao & Watterston, 2022). Zhao and Watterston (2022) identified a lack of learner self-determination and self-regulation as concerns that existed prior to the COVID-19 pandemic. Two leaders shared that difficulty with time management hindered learner readiness for managing their learning in the virtual environment (P12, P18). A director of instruction (P6) said that students lacked the “internal motivation” for online learning. An executive leader (P18) proposed that students’ overreliance on teachers to guide learning has affected their ability to manage their time and progress in a flexible learning environment:

In general, over the last 20 years or so, I think we’ve spent less time helping students become more independent learners. We’ve made them more reliant on teacher presence and on supremely guided educational environments. I understand why we’ve done that, and I think it’s helped increase some of the success measures in education. But I don’t know if ultimately we’re doing students a disservice ... from the standpoint of when they do get in a more independent environment, like a distance learning program that doesn’t involve a synchronous Zoom component, which means our students struggle a lot more than they probably should be.

This leader suggested that the lack of learner independence was connected to an increasing pressure on teachers and administrators to meet accountability measures by carefully guiding learning activities.

Two leaders said that limited English proficiency hampered individual readiness to learn online (P15, P22). A director of instruction (P15) described the challenge of working with students whose acquisition of English varied, and this presented difficulties in a text- and media-rich online environment. English language support was provided by the local schools, but services varied by district. This leader openly remarked, “I don’t have an answer. I don’t know even know how to scratch the surface of that one yet, except that is one we’re working on. But that’s a very real barrier in equity.” An exploration of how online leaders and teachers support students with limited English proficiency in the virtual environment is a potential avenue for future research.

Eleven leaders identified a lack individual readiness for virtual learning as a barrier. Learner readiness was influenced by a limited technical skill set, an inadequate foundation in the content area, limited organizational skills or motivation, and communication barriers due to limited English proficiency. Table 39 displays participant responses for the perceived factors. The next section will address the approaches that leaders shared to prepare students for learning in the online environment.

Table 39*Factors Influencing Individual Readiness for Virtual Learning*

Factor	P 3	P 4	P 6	P 11	P 12	P 13	P 14	P 15	P 18	P 21	P 22
Lack of readiness for virtual learning	X	X	X	X	X	X	X	X	X	X	X
Limited technical skill set			X	X	X						
Inadequate foundation in the content area	X	X	X		X	X					
Limited organizational skills or motivation			X	X	X				X		
Communication barriers due to primary language								X			X

Approaches to Prepare Online Learners. Leaders in state-level supplemental virtual programs shared several approaches to assist learners with working in the online environment and scaffold learning. Fifteen leaders (71%) shared ways that teachers work individually with students. While there was not broad consensus among leaders about how to best prepare students for online learning, common approaches included course and program welcome processes, making supplemental resources available to students, utilizing course pathways to personalize learning, and offering tutoring services.

Eight leaders mentioned that the program provides a welcome or orientation to help learners acclimate to the program before beginning the course (P3, P4, P7, P8, P12, P13, P14, P16). Course orientations were designed to assist students with navigation and course tools (P3, P12). In an effort to strengthen learner preparation for virtual learning, program A launched a student orientation committee to review the orientation process and provide feedback about areas of potential improvement (P3). Course welcome activities included messages and calls from teachers to students to introduce themselves and begin to assess where students were in their

learning (P7, P8, P13, P14). Building individual relationships through course welcome activities was shared as a way to encourage student engagement in the course (P4, P7, P8, P13, P14).

Leaders shared that they addressed students' lack of foundation in the content area by integrating supplemental resources and utilizing course pathways to personalize instruction. Nine leaders mentioned developing and integrating course resources for students needing remediation support (P1, P3, P6, P14, P15, P16, P17, P18, P22). A curriculum and design leader (P3) shared that the curriculum team added review modules for previous levels of world-language study and preassessments in math to gauge where students were at the beginning of a course. Two leaders described "take two" remediation modules that could be used when students did not perform well on a quiz (P1, P15). In program E, some courses were designed with pathways for intervention or enrichment, which allowed teachers to personalize instruction for students (P6, P14, P15, P20, P22). In a pathways course model, lessons and assessments were assigned to students in the LMS based on their content mastery. Students needing additional scaffolding saw a different set of lessons, practice, and materials than those of students who met minimum score thresholds.

Eight leaders (38%) from four programs described synchronous tutoring services offered by faculty or peers (P2, P7, P12, P14, P15, P18, P20, P22). Program E offered a peer tutoring center as well as instructional tutoring in core courses (P14, P15, P20, P22). Students participating in the peer tutoring center completed a training program to become a "certified peer tutor" (P20). Peer tutors supported both academic success and mentorship through a "virtual buddy" program (P14, P22). Program C offered an academic tutoring center that was available at any hour of the day, seven days a week (P18). Although the program was not widely used, leaders have kept it running "because we know that some students need immediate answers to questions, and emailing back and forth is not going to get that." Programs B and D compensated

faculty members who volunteered to tutor students in their content area, but leaders acknowledged that attendance was not consistent (P7, P12). A director of instruction (P12) explained that students did not attend because they were nervous to ask an adult for help.

Finding 11 Summary. Virtual program leaders prepare students for online learning and address gaps in knowledge through a personalized approach to instruction. Tables 40 and 41 provide an overview of participant responses for leadership approaches to helping students adapt to working online. Practices were shared that addressed developing technical skills and strengthening content knowledge. Leaders from five programs discussed orientation and welcome processes that prepared students for working in the online platform and that established connections with the online teachers. Leaders in three programs described supplemental resources that were utilized in courses to scaffold learning. Leaders from program E noted that the pathways design enabled students to have a more individualized experience in the courses where this model was available. Finally, four programs offered tutoring services, and leaders reported that the peer tutoring model was successful with regard to utilization. Although it was outside the scope of this study, further research is recommended into how virtual schools may address students' lack of organizational skills and motivation in order to best prepare them to be independent learners.

Table 40*Approaches to Prepare Students for Virtual Learning, by Participant*

Approach	P 1	P 2	P 3	P 4	P 6	P 7	P 8	P 12	P 13	P 14	P 15	P 16	P 17	P 18	P 20	P 22
Course orientation and welcome processes			X	X		X	X	X	X	X		X				
Supplements to course instruction	X		X		X					X	X	X	X	X		X
Development of different course pathways					X					X	X	X			X	X
Tutoring		X				X		X		X	X			X	X	X

Table 41*Approaches to Prepare Students for Virtual Learning, by Program*

Approach	A	B	C	D	E	F
Course orientation and welcome processes	X	X		X	X	X
Supplements to course instruction	X		X		X	
Development of different course pathways					X	
Tutoring		X	X	X	X	

Finding 12

Consistent support from trained school facilitators creates an equitable learning environment for students in state-level supplemental virtual programs.

Analysis to Support Finding 12. Leaders shared that the level of support from school facilitators influenced learning in online courses. In the partnership model between the state-level supplemental virtual program and the local school, students remained members of the local school and the school district retained the per pupil funding through the average daily membership calculation (P2, P4, P8, P9). The virtual program provided the licensed teacher of record and instruction. The local school designated a counselor and a supervising adult to monitor student progress during the assigned class period. An executive leader (P18) emphasized

the importance of faculty and staff—from both the virtual program and the local school—working together to support students: “It takes a village to teach an online student. That means our teacher, our support staff, a local facilitator, a parent, a counselor.... We all need to be pulling on the same oar to help that student out.” Leaders reported that students’ experiences in online courses depended on two partnership factors that local schools control: support from personnel designated to supervise students and the placement of students learning at school.

The personnel designated to supervise students influenced how students engaged in online courses. Within the context of this study, this local school role is referred to as the *facilitator*. Researchers shared that helpful facilitator behaviors include advising and motivating, reminding students of deadlines, explaining assignment instructions, and contacting teachers about student progress (Borup & Stimson, 2019; Kumi-Yeboah et al., 2018). Six leaders stressed the importance of a consistent facilitator in the room with students to provide “emotional support” (P2), motivate students (P12), and monitor progress (P1, P2, P7, P12, P15, P18). A leader (P21) emphasized, “We do know that the quality of the facilitator in the room makes quite a difference.” A director of instruction (P7) said that facilitators were “critical” to student success, and that most were “very responsive” when teachers contacted them with concerns or questions.

On the other hand, leaders reported that disruptions to the school facilitator role negatively affected students. Fourteen leaders (62%) identified inconsistent facilitator support as a barrier to virtual learning (P1, P2, P4, P6, P7, P10, P11, P12, P14, P15, P17, P19, P21, P22). A factor that contributed to inconsistency was limited attention to the facilitator role due to the assignment being viewed by local staff as “just one more thing” (P7, P12). A director of instruction (P7) expressed, “Quite often that school facilitator is somebody [on whom] the

district has just arbitrarily tacked that responsibility. There's no additional compensation. It's just one more thing on an already very full plate." In some cases, the role had been assigned to an adult who was not physically present with the students, which made communication difficult (P12, P15, P17). Three leaders reported that the quality of the facilitation varied (P10, P15, P21), and two leaders said that working with inconsistent facilitators was a "struggle" (P12, P17). Nine leaders (43%) mentioned that staffing issues at the local school contributed to instability in student support (P1, P2, P3, P4, P6, P7, P12, P13, P15). An executive leader (P1) explained that "constant turnover" in school-level personnel resulted in a "revolving door" of coverage for the facilitator role, which disrupted the ability to build a working relationship with the online teachers and support students.

In one example, a lack of follow-up communication with the local school contributed to frustration within the partnership. A leader (P19) expressed frustration with a district that had enrolled alternative students into the virtual program "without the requisite resources to make that successful." In that situation, the students were not present in school and did not attend their online classes. The leader (P19) recalled that the district contact did not respond to repeated communications or alerts: "Those kids never showed up to class. It caused a real bottleneck in the amount of resources and work that went into that situation, whereas the district just didn't care about those kids and what they were doing." The leader described the district's inaction as not caring about the students and not taking responsibility for their learning.

Leaders mentioned that the placement of students at the school for their online class affected their ability to focus. A director of instruction (P12) offered basic three expectations for what students needed to support learning: "The students need a time, a place, and adult [facilitator]." An executive leader (P1) reported a barrier was that some schools did not provide

students with a designated class period or location in the school for their online course. Three leaders said that students needed to be in a location free of distractions (P2, P17, P22). A negative example was given for world languages students working in a “noisy” library with headphones “struggling” to hold a conversation in the target language during class (P17). Other leaders said that students were placed in a classroom (P1, P15) or an “online lab” with on-site facilitators who monitored groups of students (P2, P9).

Borup and Stimson (2019) suggested that online students are best supported when facilitators are trained on how to use the LMS, instructional tools, strategies, and expectations for monitoring and supporting online learning. Twelve leaders (57%) shared that a component of facilitator success was training from the virtual program (P1, P2, P4, P6, P7, P12, P14, P15, P17, P20, P21, P22). The facilitator training is required by program A for anyone serving in the role (P21). Program E also created a handbook for the role (P6) and offered regular outreach meetings and drop-in support sessions for facilitators via web-conferencing (P14).

Finding 12 Summary. Consistent support from trained school facilitators creates an equitable learning environment for students in state-level supplemental virtual programs. Factors that influenced school partnerships included the support provided by school-based facilitators, staffing concerns, a designated learning space for students in the building, and training for school-based roles. Table 42 presents the participant data for each of these factors. Leaders perceived the most influential variable in student learning at the school to be the effectiveness of the facilitator. The ACE framework (Borup et al., 2020) demonstrates the essential support that facilitators can provide to students within the course community. However, a review of the literature did not yield research into the impact of inconsistent or ineffective facilitation for K–12 online learning.

Table 42*Partnership Factors That Influence Virtual Learning*

Factor	P 1	P 2	P 3	P 4	P 6	P 7	P 9	P 10	P 11	P 12	P 13	P 14	P 15	P 17	P 18	P 19	P 20	P 21	P 22
Support from supervising adult	X	X		X	X	X		X	X			X	X	X	X	X		X	X
Staffing issues at local school	X	X	X	X	X	X				X	X		X						
Placement of students in school	X	X					X			X				X					X
Training and outreach for school personnel	X	X		X	X	X				X		X	X	X			X	X	X

Data Points

Additional information shared by leaders during the interviews offered a deeper understanding of leadership considerations for state-level supplemental virtual programs. Data points included leaders' perspectives on limitations of the supplemental virtual model, flexible approaches to instructional modality, and the reasons students take courses through supplemental virtual programs. A brief analysis of each point is provided.

Data Point 1

Leaders described the state-level supplemental model as “limited” with regard to funding (P2, P18, P20). Funding was based “per enrollment served” (P2) and was “resource limited” (P20). An executive leader (P18) noted the program had “[a] finite capacity [and] finite resources,” meaning that “[the program] can’t be everything to everyone.” Leaders also described the limited role that virtual programs fulfilled in the state (P2, P4). Two executive leaders (P2, P4) shared that their programs operated in states with full-time virtual charter schools and that this coexistence caused confusion for school districts. One leader (P4) reported that despite operating in the state for nearly 20 years, some schools did not trust the state-level program: “This may stem from the environment where large for-profit programs are seen to take students from public schools. The state-level program, however, allows public schools to keep their students, maintain ADM funding, and retain students in the school community.” Another executive leader (P2) emphasized: “We don’t want to be a full-time virtual charter school in the state. We want to be able to help support the school. Our program is intended to come alongside a school, but not replace them.” Students typically participated in state-level supplemental programs on a part-time basis, taking between one and two classes (P2, P12, P14).

A limitation of state-level supplemental virtual programs was a heavy reliance on part-time teachers. Seven leaders from four programs shared that either all or the majority of their faculty are part-time employees (P1, P2, P7, P12, P17, P18, P20). Programs C and E only hired part-time faculty (P1, P17, P18, P20), and leaders from programs B and D estimated that between 85% and 95% of their faculty were part-time (P2, P7, P12). Leaders from program F shared that the faculty were primarily part-time prior to the pandemic, but the model shifted when the program began offering a full-time synchronous instruction option (P4, P13). Leaders from program A did not mention part-time or full-time teacher status within the context of the interview questions. A leadership challenge of working primarily with part-time teachers was community building among the faculty and staff (P1, P4, P7, P18). Two leaders expressed concern about balancing program expectations for part-time teachers to attend training and meetings in the evenings or on weekends (P7, P18).

Another challenge when working with a part-time faculty was teacher availability during the day. A director of instruction (P6) mentioned that limited access to virtual teachers during the day hindered the program's ability to offer synchronous instruction during a regular school schedule: "The problem is we don't have full-time [teachers], and flexibility is hard." Most part-time teachers worked during the day and were available for meetings and synchronous support during the afternoons or evenings (P2, P6, P12, P18). Two leaders said a delay in response time from teachers who were unavailable during the day was a frustration for students (P11, P12). A director of instruction (P12) explained, "[Students] get frustrated because the teacher isn't there for that immediate feedback. They're used to that environment where they have a question, they raise their hand, [it] gets addressed, and they move on." Responses to asynchronous

communication might come several hours later or even the next day, and it took students some time to adjust their expectations (P11).

Data Point 2

A flexible approach to instructional modality can ameliorate time constraints in state-level supplemental virtual programs. Leaders reported that time was a limited resource for both students (P1, P3, P6, P12, P13, P15, P18, P19, P20, P21) and teachers (P6, P7, P12, P15, P17, P18, P19). Although state-level supplemental virtual programs provided primarily asynchronous instruction, many synchronous instruction opportunities were offered.

Synchronous instructional models varied by program. Programs A and F provided regular synchronous instruction for students. Students in program A attended synchronous sessions twice weekly (P3, P9, P21). Students in program F participated twice weekly in a hybrid model (P8) and could enroll in the full-time synchronous option four days a week (P4, P8, P13). Programs B, C, D, and E offered synchronous instruction in limited areas. Program B provided regular synchronous instruction in literacy to elementary students (P2) and twice-weekly sessions in specific cohort models for Spanish (P12). Program D gave teachers the flexibility to structure their optional weekly synchronous lesson time to fit the needs of students who attended (P7). Programs B, C, D, and E offered optional drop-in support hours for students, typically in the afternoon or evening (P7, P12, P14, P15, P18). Program E provided regular synchronous instruction with conversation coaches in world-language courses twice weekly and a middle school math pilot program three times a week (P1, P6, P14, P15, P17). Tutoring options were available in programs B, C, D, and E as additional, flexible support for students (P2, P7, P12, P14, P15, P18, P20, P22). Although the program options varied, all programs dedicated resources to an instructional model that integrated both synchronous and asynchronous

opportunities for learning. Table 43 presents instructional modality options organized by each program.

Table 43

Instructional Modality, by Program

Modality	A	B	C	D	E	F
Primarily asynchronous	X	X	X	X	X	X
Synchronous instruction is part of the core instructional model	X					X
Synchronous instruction part of the instructional model in limited areas		X		X	X	
Drop-in support hours	X	X	X	X	X	X
Tutoring		X	X	X	X	

Data Point 3

Students take courses with state-level supplemental virtual programs for a variety of reasons. Leaders shared the following explanations for why students enrolled through a statewide supplemental virtual program:

- The course was not offered locally (P1, P3, P4, P7, P11, P12, P16, P17, P19).
- The school had a teacher shortage (P1, P2, P4, P6, P12, P16).
- The student had a schedule conflict at the local school (P11, P13, P21).
- The student had a medical need for virtual learning (P3, P4, P11, P13, P21).
- The student needed to travel extensively due to sports, fine arts, or other competitive training (P4, P6, P8, P9).
- The student was in juvenile detention or an alternative program (P3, P8, P15, P19).
- The student wanted to get ahead in their course trajectory (P11, P12).

While some of the motives for taking an online course were within a student's locus of control, students sometimes were assigned an online course as a last-resort option (P3, P11). When an

online course comes as a surprise to students, this may influence their readiness to engage in online learning. An exploration into why students take K–12 online courses and their motivation or academic success in a virtual environment are potential areas for future research.

Summary

Chapter 4 presented an analysis of the data from leaders' responses about their experiences with developing a culturally inclusive community and an equitable learning environment in state-level supplemental virtual programs. The data from 15 one-on-one interviews and two focus groups revealed several themes related to online learning in this setting. Twelve findings were identified as they related to community and addressing barriers to equity. Three data points also emerged from leaders' descriptions of their experiences in state-level supplemental virtual programs.

Building community with employees, although challenging (P1, P4, P7, P13, P18), was valued by leaders in state-level supplemental virtual programs. Leaders dedicated program resources to both in-person and virtual opportunities for faculty and staff to strengthen relationships, collaboratively plan, and learn together. The themes of relationship building, collaboration, contributing to the community, communication, and visibility emerged from the data analysis.

Leaders identified several barriers to virtual learning and practices that leaders and teachers implement to develop an equitable learning environment. Barriers were related to accessing and connecting with content, connectivity and technology, individual readiness, and school partnerships. Instructional and course design practices supported accessibility, cultural representation, and learner readiness for working in the online environment. Approaches to

navigating connectivity and device-related concerns were implemented in partnership with the local school.

Chapter 5 discusses the findings from the study as related to the review of literature on online learning (Chapter 2). Implications for practitioners and policymakers as well as recommendations for future research are also presented.

Chapter 5: Discussion of Major Findings and Implications

Introduction

The purpose of this qualitative study was to investigate leaders' experiences with developing a culturally inclusive community and equitable learning environment in six state-level supplemental virtual programs. In Chapter 4, qualitative data collected from 15 one-on-one interviews and two focus groups were presented. Interviewees were four executive-level leaders, seven directors of instruction, four curriculum and design leaders, four program leaders in other areas supporting teaching and learning, and two instructional designers. Two research questions guided the study:

1. How do leaders in state-level supplemental virtual programs describe their experiences with developing a culturally inclusive community:
 - a. At the program level for faculty and staff?
 - b. At the program and course levels for students?
2. How can instructional and course design practices address barriers to virtual learning in order to facilitate an equitable learning environment for students of diverse backgrounds?

The research addressed a gap in the literature for K–12 online learning regarding how leaders in state-level supplemental virtual programs facilitate community at the program and course levels. The current research also identified several barriers to virtual learning and how leaders and faculty navigated these challenges through course design and instructional practices. This chapter includes a review and discussion of the findings, implications for practitioners and policymakers, and considerations for future research.

Major Findings

In this research, a finding is considered major if more than 50% of participants responded in the same way. Findings 1 through 6 are major findings: More than 50% of leaders reported similar practices that develop a culturally inclusive community for faculty, staff, and students in state-level supplemental programs. Findings 7, 8, and 12 are considered major findings as well, as more than 50% of leaders identified the same barriers to virtual learning and similar practices for addressing them through course design and instruction. Findings 9, 10, and 11 reflect a consensus of more than 50% regarding how limited connectivity, device limitations, and individual learners' lack of readiness are barriers that inhibit equitable access to learning. However, there was less than 50% agreement in leaders' responses to address these challenges. All findings are reviewed in the next section with research found in the review and analysis of literature from Chapter 2.

Major Findings for Research Question 1

Findings 1 through 6 addressed research question 1: How do leaders in state-level supplemental virtual programs describe their experiences with developing a culturally inclusive community? This question and associated interview questions (Table 12) were used to identify (a) how leaders design and facilitate community building for their faculty and staff at the program level, (b) how leaders perceive that teachers build community with students at the program and course levels, (c) how efforts to build a culturally inclusive community may benefit students, and (d) what challenges leaders may experience with building a culturally inclusive community. Each major finding is discussed in the context of the literature from Chapter 2.

Discussion of Finding 1. State-level supplemental virtual program leaders build community among faculty and staff through a hybrid model for in-person and online meetings, training, and collaboration.

According to leaders in this study, a combination of in-person and virtual work experiences were valuable in building community among faculty and staff. Considerations for community building at the program level included intentionally creating opportunities to meet, collaborate, and learn together. Modeling positive communication and community-building strategies for faculty and staff was a leadership practice during meetings and professional learning. Leaders established structures that facilitated regular communication and interaction among their staff. Researchers recognized the benefit of a collaborative working environment (McGee et al., 2017; Philipsen et al., 2019), which encourages the development of *collegial presence* (Sanders & Lokey-Vega, 2020; Warnick & Mullen, 2023). Opportunities to learn together contributed to a community of practice (Wenger et al., 2009), which supported an environment for leaders, faculty, and staff to refine their skills and share effective practices. In-person events were described as a time to connect with one another, which diminished feelings of loneliness. Isolation has been shown to negatively affect online students (Bigatel & Edel-Malizia, 2018; Jackson, 2017; Kumi-Yeboah et al., 2018; Warnick & Mullen, 2023; Wasfy et al., 2021), and this study found that employees may also have similar experiences in a virtual environment.

Discussion of Finding 2. State-level supplemental virtual program leaders facilitate a supportive community for faculty and students through a variety of staff roles within the organization.

A sense of community is established for leaders, faculty, and students by a network of individuals who support one another in their daily work. Curriculum teams, consisting of curriculum leaders, subject matter experts, and instructional designers, developed standards-aligned online courses for faculty members. Curriculum leaders and instructional designers also worked through instructional issues such as learner accessibility with online content. Instructional designers assisted teachers with educational technology (An, 2021; Barbour et al., 2018; McGee et al., 2017; Russell, 2020). Instructional leaders utilized a distributive approach (Wasfy et al., 2021) and shared responsibilities with coaches and department leaders. Instructional teams worked together on faculty supervision and evaluation, staffing, scheduling, and managing student concerns (Garza Mitchell, 2009; McLeod & Richardson, 2018; Wasfy et al., 2021). Student support staff also assisted faculty and students with registration, counseling, and special education. Each of these program staff roles contributed to a supportive environment conducive to teaching and learning. This research was not intended to be prescriptive with regard to organizational staffing structures. While program technology and LMS infrastructure roles were not mentioned by leaders within the context of the interview questions, a closer examination of virtual program organization could inform leadership decisions about program staffing structures.

Discussion of Finding 3. State-level supplemental virtual program leaders have developed and implemented processes that support teacher input in course content and autonomy in course instruction.

Although teachers did not design their own courses in virtual programs, leaders have developed processes that support teacher input on curriculum and autonomy in instructional practices. Content development is a rigorous, time-consuming process that involves both subject

matter and design experts. Researchers recommended that curriculum designers implement course design standards of quality (Baldwin et al., 2018; Barbour et al., 2018; Bigatel & Edel-Malizia, 2018; Gacs et al., 2020; Warnick & Mullen, 2023). K–12 leaders also accounted for course alignment to applicable state or national standards (Rice & Skelcher, 2018). Courses were developed at the program level and delivered to teachers as a standardized package, which allowed teachers to focus their efforts on instruction (Schueler & West, 2022). Nonetheless, teachers submitted input and corrections to courses through curriculum change forms.

Additionally, teachers participated in course design projects as subject matter experts. Leaders supported instructional practices such as creating supplemental resources, adapting instruction for individual learners or group needs, and adjusting the pace of instruction. Implementing processes for teachers to provide course feedback and retain instructional autonomy was a leadership practice that acknowledged teachers' professionalism and contribution to the program community.

Discussion of Finding 4. Building relationships with students supports the course community and student engagement in a state-level supplemental virtual program model.

Building relationships was strongly supported by leaders as an instructional practice that establishes community at the course level. Making personal connections with students was attributed to higher levels of affective and cognitive engagement in courses, which aligns to the concept of a supportive course community presented in the ACE framework (Borup et al., 2020). According to Borup et al. (2020), making personal connections with students increases learners' affective engagement, or their emotional energy and involvement in the course. When students are emotionally invested in a course, teachers can more easily guide their learning and understanding of the course material. Researchers connected efforts to build community in

online courses with higher levels of student engagement (Anderson-Mejías, 2018; Bigatel & Edel-Malizia, 2018; Borup et al., 2020; Enkin & Mejías-Bikandi, 2015; González-Lloret, 2020; Hammond, 2017; Rothstein & Haar, 2020).

While leaders reported that interaction with peers from different communities across the state was beneficial, few leaders said that collaboration with peers contributed to building community. The difficulty in finding a common time and space hindered peer collaboration in primarily asynchronous models. Course community is strengthened by opportunities for students to work together (Lokey-Vega et al., 2018; Warnick & Mullen, 2023). This research found that peer collaboration was described as a beneficial practice for building community in models with regular, required synchronous interaction. Small-group collaboration during synchronous instruction was found to engage students with the content and cultivate connections within the course community, which is supported in the literature (Borup et al., 2020; Tuiloma et al., 2022).

Discussion of Finding 5. Frequent, positive communication with students and families using a variety of tools builds course community and promotes student engagement in state-level supplemental virtual programs.

Consistent communication practices with students and families promoted student engagement and community. Teachers communicated with students through LMS tools, web-conferencing, email, and phone. Using these tools, teachers provided course updates and reminders, delivered feedback on student work to guide learning, and fostered connections to motivate learners. Responsive and encouraging communication establishes teaching presence in online courses (Akcaoglu & Akcaoglu, 2022; Borup et al., 2014; Gacs et al., 2020; Garrison et al., 2010; Jackson, 2017; Mullen, 2020a, 2021; Warnick & Mullen, 2023). Achieving two-way communication with students and families is an essential practice to support learning, especially

for students with disabilities (Adigun et al., 2022; Rice & Carter, 2015), and this can be a challenge if phone calls or emails are not returned. As learners may feel isolated and reluctant to speak with adults in the online environment (Borup et al., 2020), teachers who communicate frequently may bridge this physical separation. Teachers utilized course announcements, self-created videos, phone calls, text messages, emails, and web-conferencing tools to strengthen individual relationships and facilitate community building. While teachers relied on text-based communication such as emails and discussions in the online environment, achieving a positive tone in text-based communication is sometimes difficult. This research suggests that communication using multiple tools is an instructional practice that contributes to social presence in the course community and encourages student engagement (Akcaoglu & Akcaoglu, 2022; Garrison et al., 2010).

Discussion of Finding 6. The need for teacher visibility and some student anonymity influences presence in the course community.

The online environment supports simultaneous teacher visibility and some student anonymity among one's peers. Teachers in virtual programs cultivated a visible presence through opportunities to be physically present on camera during web-conferencing and in videos. Teachers also established their visibility through active communication and personalized feedback to students. The concept of teacher visibility, manifested through actions that guide learning and connections with students, aligns with the CoI constructs of teaching and social presence. Teachers demonstrate teaching and social presence through course facilitation, direct instruction, communication, and the interpersonal relationships they nurture with students (Akcaoglu & Akcaoglu, 2022; Garrison et al., 2010; Jackson, 2017; McHugh et al., 2020; Rubio et al., 2018; Warnick & Mullen, 2023).

On the other hand, leaders and teachers in state-level supplemental virtual programs supported some student anonymity in the online classroom. Students maintained control over how much of their personality to reveal to others and how they interact with other course participants. Rothstein and Haar (2020) proposed that camera usage in synchronous instruction increases student participation. While some instructional models required camera usage for learners, teachers exercised discretion with camera usage during synchronous instruction, and students could elect to work off camera. There appeared to be a connection between practices that allowed for some student anonymity, such as reduced camera usage, and a reduction in bias or stigmas within the course community. This finding suggests that there are nuances regarding how social presence may be projected differently by teachers and students in the virtual program setting.

Major and Other Findings for Research Question 2

Findings 7 through 12 corresponded with research question 2: How can instructional and course design practices address barriers to virtual learning in order to facilitate an equitable learning environment for students of diverse backgrounds? This research question and associated interview questions (Table 12) were used to identify barriers to virtual learning as well as the course design and instructional practices utilized to support students. More than 50% of leaders identified course accessibility and usability, cultural representation, and inconsistent school facilitator support as barriers to virtual learning reflected in findings 7, 8, and 12. For each of these three findings, leaders implemented similar practices to resolve the challenges. Additionally, more than 50% of leaders said that limited connectivity, device limitations, and individual learners' lack of readiness inhibit equitable access to learning reflected in findings 9, 10, and 11. However, there was less than 50% agreement in leaders' responses to address these challenges. Each finding is discussed in the context of the literature from Chapter 2.

Discussion of Finding 7. Course design and delivery that support usability and accessibility facilitate an equitable learning environment for students in state-level supplemental virtual programs.

Leaders identified unmet students' needs to access content as a barrier to virtual learning. Course design and instructional practices that supported accessibility and usability for students provided for a more equitable learning environment. In virtual programs, online courses were developed according to the UDL principles (CAST, 2018; Kelly & Zakrajsek, 2021). Course design processes considered navigation, how content was presented on lesson pages, and how students would interact with the course material. Although online courses were designed to meet basic accessibility standards, leaders encountered specific challenges for students that required a partnership approach with schools to resolve. Researchers recommended that teachers receive training on instructional practices to support how learners with disabilities may need to access online content (An, 2021; Gacs et al., 2020; Martin et al., 2019). In this study, two virtual programs provided accessibility and usability training for their teachers working on content development projects. An exploration into how prospective K–12 teachers and current virtual faculty are prepared to meet learners' needs for accessibility in course design and instruction is a potential area for future research.

Discussion of Finding 8. Cultural representation in online courses and diversity among the faculty help students connect with the content in state-level supplemental virtual programs.

Leaders identified a lack of cultural representation and diversity among employees as a barrier to virtual learning. Curriculum leaders implemented course design processes that thoughtfully considered how cultures were represented in images, examples, and text. In four programs, leaders indicated that courses and instruction included information related to state-

specific communities, and that this approach increased the content relevancy for learners. A statute in state C specified intentionally incorporating culturally relevant content about Indigenous populations, which necessitated a careful review and edits of vendor or open-educational-resources content. Research from the literature review proposed that a culturally inclusive course community benefits students of diverse backgrounds (Kumi-Yeboah et al., 2018; Rothstein & Haar, 2020; Woodley et al., 2017). A curriculum and faculty that represent the student population engage learners by connecting them to the content and the teacher.

Discussion of Finding 9. Leaders and faculty in state-level supplemental virtual programs partner with schools and the community to navigate limited internet connectivity.

Leaders identified limited connectivity as a barrier to online learning for students and faculty. The COVID-19 pandemic exposed the inequity of state and community access to reliable internet (Brinkmann et al., 2021; Cash et al., 2020). Leaders in all six state-level supplemental virtual programs noted that federal funding had helped improve high-speed internet access. However, leaders from every program acknowledged that connectivity remained a concern for students, particularly those in rural areas.

Issues of digital inequality negatively affect students' access to learning and their ability to participate fully in online courses (Ball, 2022; Carillo & Flores, 2020; Gan & Sun, 2021; Mann et al., 2021; Masry-Herzallah & Stavisky, 2021; Tate & Warschauer, 2022; Watson, 2022). Synchronous instructional models, in which learners are expected to meet at a specific time, exacerbated inequity for students with slow internet and inconsistent video streaming capability (Ball, 2022). Tate and Warschauer (2022) reported that a disproportionately high number of racial and ethnic minority students and those in rural areas do not have adequate access to broadband, and they more often come from homes with lower family income levels.

Although students may have time allocated during the school day for their virtual classes, those without high-speed connections in the home are disadvantaged by not being able to appropriately access online course materials from home for additional study (Gan & Sun, 2021).

All programs in this study served students with limited access to high-speed internet; however, there was no broad consensus about how to address this challenge. Leaders and teachers in state-level supplemental programs have relied on school partnerships and community structures to support students, and solutions depend on individual circumstances. This finding suggests that work remains to be done to ensure that virtual learners in the United States, and especially from rural areas, have equal access to the internet. Support from public and private sectors, including from federal sources, is needed to eliminate the barrier of slow or no internet (Gan & Sun, 2021).

Discussion of Finding 10. Leaders and faculty in state-level supplemental virtual programs address device and technology-related barriers to learning through course design approaches and partnerships with schools.

Factors that influence equitable access to online learning are high-speed connectivity and device limitations (Anthony & Miller, 2022; Ball, 2022; Brinkmann et al., 2021; Cash et al., 2020; Gan & Sun, 2021; Mann et al., 2021; Tate & Warschauer, 2022; Watson, 2022). A leading cause of attrition in online learning is confusion with the course technology (Barbour et al., 2018; Goertler & Gacs, 2018). Learners may feel confused and frustrated when experiencing difficulty viewing course components or if course tools fail to function on their devices. Leaders from all six programs said that device limitations were an issue for students being able to access course content. Leaders from three programs identified local school firewalls blocking course content as a barrier.

The approaches that leaders shared to address these technology issues varied, and there was not a majority consensus about how to resolve problems. One possible explanation for this is the wide variety of devices issued by schools or available to students in their homes. Technology issues often require individualized solutions. Leaders proactively navigated some challenges by formatting courses to function on a variety of student devices, generally with the most basic hardware in mind (e.g., Chromebook). In other situations where content was blocked by firewalls, leaders worked in partnership with schools to resolve access problems. A final consideration for this finding is that federal grant funding boosted school investment in one-to-one device initiatives for students during the pandemic (Brinkmann et al., 2021; Cash et al., 2020). A potential challenge will be maintaining updated hardware well into the future when relying on state and local funds.

Discussion of Finding 11. Virtual program leaders prepare students for online learning and address gaps in knowledge through a personalized approach to instruction.

Researchers have cautioned that providing resources alone may be insufficient to help some students overcome inequity in virtual models (Anthony & Miller, 2022; Tate & Warschauer, 2022; Tienken, 2022). Leaders in this study identified a lack of individual readiness for virtual learning as a barrier. Learner readiness was influenced by limited technical skills, foundation in the content area, organizational skills, and motivation. Communication difficulties due to limited English proficiency were also noted as a challenge. This finding supports previous research on how a lack of adequate technology skills (Gan & Sun, 2021; Mann et al., 2021) and self-regulatory skills (Tate & Warschauer, 2022) may impact student success in the online environment.

Leaders from five programs discussed orientation and welcome processes that introduced students to their teachers and prepared them for working with course tools in the online platform. To strengthen students' content knowledge, leaders in three programs described supplemental course resources to scaffold learning. A personalized pathways course design in some program E courses offered students a more individualized experience tailored to their learning needs. Although beneficial, a highly personalized course design can be time-consuming to develop, which may explain why it is not widely used among programs. Finally, four programs offered tutoring services, and leaders reported that a peer tutoring model had been successful. Although it was outside the scope of this study, further research is recommended into how virtual schools may address students' lack of organizational skills and motivation in order to best prepare them to be independent learners.

Discussion of Finding 12. Consistent support from trained school facilitators creates an equitable learning environment for students in state-level supplemental virtual programs.

Inconsistent student support from the school was identified as a barrier to virtual learning. Virtual programs relied on schools to provide a place, time, and facilitator for learning. Factors that influenced student learning included the assistance provided by school-based facilitators, staffing concerns, the designated learning space for students in the building, and training for school-based roles. Leaders perceived the most influential variable in student learning at the school to be the facilitator's effectiveness. Regular monitoring and guidance from a supervising adult encourage student success in the online environment (Borup & Stimson, 2019; Borup et al., 2020; Tate & Warschauer, 2022; Warnick & Mullen, 2023). They frequently assist students with technology issues, organization and time management, and overall progress checks. Leaders said that while training was provided for school personnel serving as facilitators, in some districts,

school staffing issues made it difficult to maintain having a consistent adult in the facilitator role. A review of the literature did not yield research into facilitator training or the impact of inconsistent facilitation on K–12 online learning, this is thus an avenue for future research.

Summary of Findings

This study included leaders from six state-level supplemental virtual programs across the United States. While programs ranged in size from fewer than 10,000 to more than 50,000 semester-equivalency enrollments, leaders indicated similar responses regarding the challenges they encountered and the practices they implemented to facilitate connections and support learning. This demonstrated several common leadership experiences in this setting, regardless of program size. Leaders' answers to the semistructured interview questions shaped the findings regarding how a sense of community is developed, barriers to virtual learning, and leaders' approaches to address barriers in supplemental virtual programs. The findings offer guidance for leaders working in supplemental virtual schools. Since this school model is limited, with only 23 state-run supplemental virtual schools in the United States (Watson, 2022), leaders have few peers from whom they can learn. This research aimed to provide a window into how leaders in this setting experienced their work and the factors that informed their decision-making.

In a virtual setting, developing a culturally inclusive community refers to how leaders cultivate a shared sense of purpose through collaboration and connection among all participants. A unique consideration for state-run virtual programs is accounting for the diverse needs of communities across the state. The concept of community was perceived differently by employees and students in state-level supplemental virtual programs. Leaders highly prioritized in-person and virtual opportunities and structures to plan, collaborate, and learn with faculty and staff. Program structures accounted for multiple roles to support teaching and learning process, and

teachers were encouraged to share their expertise with one another. These regular interactions established *collegial presence* (Sanders & Lokey-Vega, 2020) and promoted the facilitation of teaching, social, and cognitive presence when working with online students. Conversely, in a primarily asynchronous supplemental model, the interpersonal relationship between the teacher and individual learners seemed to be prioritized over peer collaboration. This suggests that in this setting, the focus of establishing social presence centers more on teacher–learner connections rather than on learner–learner interpersonal connections.

Leaders identified multiple barriers to virtual learning that affected establishing an equitable learning environment for students: (a) unmet student needs for accessibility and usability, (b) a lack of cultural representation, (c) limited connectivity, (d) limitations on school-issued devices, (e) a lack of learner preparation for online learning, and (f) inconsistent support from school partnerships. Although more than 50% of leaders agreed upon all the factors that hinder access to virtual learning, leaders' approaches to working with students and schools differed. Findings 7, 8, and 11 addressed challenges of accessibility, representation, and learner readiness that can be managed through course design practices or resolved through instructional interventions. Finding 9, regarding limited connectivity, depended on community infrastructure and school resources for students to access their courses. In rural communities with slow internet access, students relied on high-speed connections through the school or local libraries to complete their coursework and interact with their teachers. Work remains to be done to ensure equitable internet access for students learning from home. Findings 7, 9, 10, and 12 highlighted the importance of leaders working in partnership with schools to serve students. Leaders and faculty work with school personnel to meet students' needs to access content, overcome

technology limitations, and encourage academic success. Leaders may strengthen partnerships with schools through consistent communication, training, and outreach meetings.

Practitioner Implications

Virtual school leaders may consider the findings from this research when determining program community building, staffing, course design, and school partnerships. While this research was specific to the state-level supplemental virtual program setting, leaders in cyber schools may consider how the findings apply to a full-time model. School district leaders may find the research helpful if implementing a district virtual campus for students.

Community Building

1. Plan and budget for regular in-person and virtual opportunities for faculty and staff to meet, collaborate, and learn together.
2. Organize and implement structures on the LMS and through external tools to facilitate communication and collaboration among participants in the program community.
3. Model timely, positive communication practices with faculty and staff within the program and externally with schools and families.
4. Build relationships with faculty, students, and families to support learning through consistent communication and opportunities to interact.
5. Incorporate course activities and instructional practices that facilitate peer collaboration and cognitive engagement with the content.

Staffing

6. Prioritize increasing diversity among leadership and faculty.

Course Design

7. Ensure cultural representation in course development through the thoughtful selection of images, examples, and texts.
8. Allocate sufficient personnel, time, and funding for course development that aligns to standards of quality and supports accessibility.
9. Implement processes to collect and review teacher feedback on program curriculum.
10. Develop flexible course resources to support student interventions and teacher autonomy in instructional practices.

School Partnerships

11. Work in partnership with school personnel to resolve accessibility and technology issues that hinder learning.
12. Strengthen school partnerships through organized training for specific roles and support meetings with individuals who work directly with online students.

Policy Implications

State virtual programs operate through state education agencies, institutions of higher education, nonprofit organizations, or state governing bodies (Watson, 2022). The mission of state virtual programs is to support equitable access to course options for public school students, regardless of their geographic location (Rice & Skelcher, 2018). Virtual program leaders from six states identified limited or no internet access as a barrier, particularly for rural students. Leaders also described challenges with limited devices and inconsistent support from school personnel due to staffing issues. To meet virtual learners' needs more equitably, policymakers at the state and local levels may consider the following recommendations related to funding:

1. Prioritize funding to build on pandemic-related improvements to make broadband universally available and affordable in each state, especially in rural areas.

2. Ensure adequate funding models for state-level supplemental virtual programs to support staffing, course development, and professional development needs.
3. Allocate sufficient funding for local schools to staff facilitator roles and maintain instructional technology.

Suggestions for Future Research

This research examined how leaders in six state-level supplemental virtual programs described their experiences with developing a culturally inclusive community and equitable learning environment. The scope of this study was intentionally broad, with the purpose of investigating how leaders cultivate a sense of belonging and navigate barriers to equity. Future qualitative or quantitative research with a narrower focus could explore how equity may influence online learner engagement and achievement. Although this study was limited to virtual school leaders, further research that includes teachers and different populations of students that identifies effective instructional practices could offer additional perspectives to drive improvements in the field.

Leaders in this study valued a carefully planned online course design that aligned to standards of quality and UDL principles. The concept of representing diverse backgrounds and state-specific communities in course design and instruction emerged from this research. Additional exploration is recommended into how cultural representation in curriculum and instruction may contribute to learners' cognitive engagement in the online environment.

Course modality is an aspect of K–12 online learning that merits further study. Instruction in state-level supplemental virtual programs, while primarily asynchronous, offered regular opportunities for synchronous meetings. Several leaders reported low student attendance at optional synchronous sessions. On the other hand, some participating programs required

synchronous instruction multiple times a week in full-time and teacher-shortage models. Leaders from programs that required synchronous attendance described the benefits of increased peer collaboration and interaction with the teachers. Additional qualitative and quantitative research into how instructional modality influences students' perceptions of the course community and their academic success could offer insights into how modality affects student outcomes for adolescents and younger learners.

Conclusions

This qualitative case analysis examined how leaders from six state-level supplemental virtual programs described their experiences with developing a culturally inclusive community and equitable learning environment for students. The research was bound by leaders' roles, years of experience, the school model, and the program's approach to curriculum development. Participants included executive leaders, directors of instruction, curriculum and design leaders, instructional designers, and other program leaders. Data were gathered from a demographic survey, semistructured one-on-one interviews, and focus groups to gain a comprehensive understanding of leadership in state-level supplemental virtual programs. This study offered a unique contribution to the field of virtual leadership by representing the perspectives and practices of leaders with many years of experience in K–12 public online education.

A theme that emerged from this research was that building community, although valuable, can be a challenge in this setting. Leaders prioritized building relationships with their faculty, staff, schools, students, and families. They reported utilizing communication tools and creating spaces on the LMS to facilitate collaboration and learning. According to leaders in this study, building community with part-time faculty was sometimes difficult due to their limited availability. At the course level, teachers established community with their students and families

by adding personal touches to communication, tailoring instruction to students' needs, and building individual relationships. Opportunities for peer collaboration were constrained in this setting due to students not easily finding a common time to work together. Although program models varied, leaders emphasized providing synchronous opportunities for students to connect with teachers and the course content.

The leadership practice of collaborative problem-solving also emerged from the research. The partnership model between state-level virtual programs and local schools exemplified the necessity of working together to offer students an equitable opportunity to learn. When students with disabilities could not access course content, curriculum and instructional leaders worked with the local school to ensure that course materials were adapted for the learners' needs. Teachers collaborated on teams within programs to compare strategies, share resources, and discuss how to adjust instruction based on learners' readiness or in response to exceptional events such as natural disasters. A partnership approach was used to help students navigate technology and connectivity problems. Students with limited internet access at home relied on school Wi-Fi, school-issued hotspots, or community resources such as local libraries to complete their work. Faculty depended on the school facilitator to directly assist students with school-issued technology, ensure that the environment was conducive to learning, and help students meet learning expectations. The important work of public education is not accomplished alone.

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Appendices

Appendix A: Literature Review

Author(s) (Year) Title	Methodology, research questions	Findings and implications	Theme(s), level
Akcaoglu, M., & Akcaoglu, M. O. (2022) Understanding the relationship among self-efficacy, utility value, and the Community of Inquiry framework in preservice teacher education.	Quantitative cross-sectional survey; regression analysis on utility questions <i>N</i> = 344 Self-efficacy: 1. What are preservice teachers' self-efficacy and utility value beliefs about distance education? 2. What do the preservice teachers feel about the three components of the CoI framework? Utility: 1. Does self-efficacy predict the preservice teachers' perceptions toward CoI components? 2. Does utility value predict the preservice teachers' perceptions toward CoI components?	Preservice teachers' self-efficacy to teach online is related to their perceptions of teaching presence (selecting materials, organizing/designing content, and direct instruction). The recommendation is for teacher education programs to offer experiences for participants to learn about course design and online pedagogy. Second, the findings suggest that participants' perceptions of the relevance of a task to one's future career is a predictor of the importance placed on social presence.	CoI, teaching presence, cognitive presence, training; higher education

<p>Barbour, M. K. (2018) Examining online research in higher education: What can we replicate in K-12?</p>	<p>Review of literature</p>	<p>Barbour makes a case for three key next steps in K–12 online learning research: (1) K–12 researchers need to use a theoretical framework to guide research; (2) use a validated instrument in research, potentially implementing the CoI framework that has been implemented with adult populations; and (3) move toward a common set of terms in the field. Additional findings from higher education that can inform K–12 online instruction include implementing formative assessment in course design and direct instructional practices, leveraging the LMS analytics to inform instruction, and focusing on the implementation of theory to guide instructional practices.</p>	<p>CoI, course design; K–12</p>
<p>Barbour, M. K., Adelstein, D., & Morrison, J. (2018) Still forgotten teachers in K–12 online learning: Examining the perceptions of teachers who develop K–12 online courses.</p>	<p>Mixed methods (quantitative through a two-part, web-based survey, $N = 33$; qualitative through phone interviews, $N = 4$) The survey questions included both closed (Likert scale) and open-ended questions focusing on aspects of the course design process, perceptions of training, perceptions of support, and perceptions of course quality.</p>	<p>Teachers and content developers often receive limited training in technology tools or usage of the LMS at the higher education level. Barbour et al. affirmed the critical support that instructional designers—or others in a technology support role at the K–12 level—provide online teachers in better understanding the technology and LMS used for course delivery.</p>	<p>Course design; K–12</p>
<p>Bigatel, P., & Edel-Malizia, S. (2018) Using the “indicators of engaged learning online” framework to evaluate online course quality.</p>	<p>Qualitative analysis of courses using the IELO framework, $N = 6$. The study focused on implementing the established IELO framework content to analyze course quality.</p>	<p>The authors of this study used the IELO framework to evaluate online course quality. They shared that effective course design can engage students, increase overall student satisfaction with their learning experience, and prevent student isolation. Low-engagement course design practices can contribute to student isolation and attrition.</p>	<p>Course design; online learning; higher education</p>
<p>Borup, J., Graham, C. R., West, R. E., Archambault, L., & Spring, K. J. (2020)</p>	<p>Proposal of a theoretical framework</p>	<p>The ACE framework proposes that a student’s affective, behavioral, and cognitive abilities to engage in online and blended learning increase when there is</p>	<p>ACE framework; K–12</p>

Academic Communities of Engagement: An expansive lens for examining support structures in blended and online learning.		support from the course community and the student's personal community.	
Gacs, A., Goertler, S., & Spasova, S. (2020). Planned online language education versus crisis-prompted online language teaching: Lessons for the future.	Review of literature	The authors acknowledged that community must be intentionally created in the online environment. Intentional online course design involves the combination of synchronous components to facilitate interpersonal communication and asynchronous components in the LMS to create a communicative environment. Teachers should be visible to their students, which is important to build community among learners. The online teacher environment differs from F2F instruction, and teachers should be evaluated differently to account for the skills required when working in this environment.	Collaboration, course design, teacher presence; higher education
Garrison, D. R., Anderson, T., & Archer, W. (2010) The first decade of the community of inquiry framework: A retrospective.	Review of literature Is the CoI framework still relevant for online learning as the field has continued to evolve?	All presences in the CoI are interdependent as well as related to the content area and technology used for student interaction (synchronous and asynchronous). Teaching presence directly impacts the PI in that the teacher designs and directs the progression through each of the phases. The authors propose that social presence has 3 aspects (or dimensions): cohesive group identification of the participants within the community, a trusting environment where students can communicate in a purposeful academic context, development of interpersonal relationships (learner-learner, learner-teacher). Garrison et al. proposed a PI model that has 4 phases for the educational experience of the student: Triggering event, exploration, integration, and resolution.	CoI; higher education

Hammond, M. (2017) Online collaboration and cooperation: The recurring importance of evidence, rationale, and viability.	Review of literature How and why have forms of collaboration been promoted over the last hundred or so years? What benefits/difficulties does collaboration offer? How has collaborative learning been evaluated? To what extent should OC be seen as marking a paradigm shift in teaching and learning?	The author posited that collaboration is essential to the learning process and that the effort of the learner to explain, situate, and defend a position creates knowledge. Technology does not disrupt collaboration because modern students are digital natives.	Online learning, collaboration; higher education
Kumi-Yeboah, A., Dogbey, J., & Yuan, G. (2018) Exploring factors that promote online learning experiences and academic self-concept of minority high school students.	Qualitative, semistructured interviews with 40 high school students (24 African American, 16 Hispanic). 1. What are the factors that promote online learning experiences and academic self-concept of minority students attending online high school? 2. What factors constrain online learning experiences and academic self-concept of minority students?	The following findings enhance online learning for minority students “collaborative learning activities, opportunities for knowledge building, access to resources and time convenience, student–teacher interactions and open communication, student–student interactions, improved behavior in the online classroom, and parental support,” whereas the “lack of social presence and lack of cultural inclusion in course content constrain the online learning experiences and academic self-concept of minority students enrolled in online school” (p. 7–8).	CoI, social and cognitive presence, course design; K–12
Lokey-Vega, A., Jorrín-Abellán, I. M., & Pourreau, L. (2018) Theoretical perspectives in K–12 online learning	Literature review of existing learning theories related to online education.	The CoI and ACE frameworks are cited as helping to move research grounded in theory forward at the K–12 level. “The field, as it stands today, is ready for growth that centers around using and developing theory as a means to drive understanding and improvements in the K-12 online context” (p. 69).	Online learning, theory, ACE framework, CoI; K–12
McGee, P., Windes, D., & Torres, M. (2017) Experienced online instructors: Beliefs and preferred supports regarding online teaching.	Qualitative, modified Delphi method, $N = 18$ (first surveys), $N = 7$ (final survey). What supports have best supported your developing online teaching expertise? Based on your experience, what characteristics define an experienced online instructor? Which of the following supports have best supported your developing online teaching expertise?	The process of learning, in effect developing expertise, was more valuable than the development of specific skills for teaching in a virtual environment. Essential supports for developing expertise in online teaching include additional time for course development, training that models best practices, support from an instructional designer, mentoring, and feedback from peers in a community of practice.	Collaboration, professional development; higher education

<p>McLeod, S., & Richardson, J. W. (2018). School administrators and K-12 online and blended learning.</p>	<p>Literature review of field of online leadership</p>	<p>There is a gap in the research for virtual school leaders. The literature discussed virtual preparation of traditional school leaders. Fewer reports address the preparation and practices for virtual school leaders: “These articles are insufficient, however, to paint a rich picture of virtual school leadership, and we are in clear need of more research that addresses the unique needs of online school leaders. Nonetheless, the existing research provides important insights and is described below” (p. 394).</p>	<p>Online leadership, online policy; K–12</p>
<p>Miller, T., MacLaren, K., & Xu, H. (2020) Online learning: Practices, perceptions, and technology.</p>	<p>Quantitative ANOVA to reveal relationship between each of the presences using an adapted CoI survey instrument, $N = 93$. What do current online courses look like in terms of the LMS? What is the level of student technological expertise in online courses, and is technology perceived as a barrier to online learning? Is there a difference in perceptions toward online learning as measured by the three dimensions of the CoI framework with respect to (a) different areas of study, (b) level of education, (c) technological experience, and (d) LMS?</p>	<p>The study did not find any significant differences between participant disciplines, technological experience, and LMS with regard to online learning as measured by the CoI presences. The study did find a statistically significant difference between graduate and undergraduate student experiences online as related to the CoI presences, suggesting that graduate students may be more independent learners and better suited for learning online. The authors proposed a restructured hierarchy for the three presences, where teaching presence acts as a foundation for learning. When combined, teaching and social presence foster opportunities for cognitive presence.</p>	<p>CoI; higher education</p>
<p>Mullen, C. A. (2020a) Does modality matter? A comparison of aspiring leaders’ learning online and face-to-face.</p>	<p>Qualitative comparative study comparing F2F and synchronous graduate students’ learning outcomes from the same course during the same semester, $N = 7$ (F2F), $N = 7$ (synchronous). Did student learning vary between groups completing the same course? Did students’ cognitive learning capacity for making meaning change from one constructivist environment to the next?</p>	<p>Empirical studies favor asynchronous models of online instruction. This study found that adult learning was equally strong for F2f and online cohorts, and that the cognitive orientation (ideas expressed by students in their writing) did not change across modalities. “The meaningful outcome for this comparative study of online and F2F learning, then, is that the distance group’s academic performance was not inferior to that of its conventional counterpart based on the measures” (p. 683).</p>	<p>CoI, synchronous instruction; higher education</p>

<p>Rothstein, A., & Haar, M. (2020) Best practices for encouraging student participation in both face-to-face and virtual environments.</p>	<p>Review of literature</p> <p>How is the theoretical framework for the importance of sense of community in education defined? What are the evidence-based variables that increase students' sense of belonging? What strategies promote discussion and participation across course formats?</p>	<p>It is possible to build community in the online environment similar to face-to-face instruction, and this is impactful for both students and instructors. The quality of instructor communication with students was one of several factors that impacted student satisfaction with higher education online courses. Additional factors included the overall quality of course instruction, feedback on graded work, and how instructors related to students from a variety of backgrounds in the online setting.</p>	<p>Building community, student engagement; higher education</p>
<p>Tate, T., & Warschauer, M. (2022) Equity in online learning.</p>	<p>Review of literature</p>	<p>The authors address equity from three perspectives: Physical, human, and social resources. Community is a consideration for equity through social inclusion. "Equitable learning occurs when every learner belongs, contributes, and thrives, regardless of race/ethnicity or socioeconomic status. Differential access to the physical, human, and social resources needed for digital learning has long exacerbated social and educational gaps in U.S. society" (p192).</p>	<p>Community, equity; K-12</p>
<p>Wasfy, N. F., Abouzeid, E., Nasser, A. A., Ahmed, S. A., Youssry, I., Hegazy, N. N., Shehata, M. H. K., Kamal, D., & Atwa, H. (2021) A guide for evaluation of online learning in medical education: A qualitative reflective analysis.</p>	<p>Deductive qualitative grounded-theory Delphi technique to identify the descriptors of best practice in online learning starting with a question-guided focus group, $N = 60$. Questions in the focus group guide covered three major themes: <i>Organizational capacity, effective learning and assessment, and online learning.</i></p>	<p>The authors identified a gap in online standards addressing policies and processes for online learning; They feel that the focus is on addressing the quality of the content. Emerging themes are related to leadership.</p>	<p>Online program leadership, course design, teaching; higher education</p>

Wenger, E., White, N., & Smith, J. D. (2009). Digital habitats: Stewarding technology for communities.	N/A	Communities of practice are defined by people's potential to learn together (Wenger et al., 2009, p. 11). "A digital habitat is first and foremost an experience of place enabled by technology" (Wenger et al., 2009, p. 38). Two aspects of helping develop community in a digital habitat are how the technology is configured and how the participants experience the habitat through practice. Leadership of a community is essential, whether shared or managed by an individual. "Meaningful learning in a community requires both participation and reification to be present and in interplay" (Wenger et al., 2009, p. 57–8). It requires both sharing as well as producing. Learning together in a community involves both individual and communal contributions, but is experienced by participants in their own ways (Wenger et al., 2009).	Building community; Communities of Practice
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Note. ACE = Academic Communities of Engagement; ANOVA = analysis of variance; CoI = Community of Inquiry; F2F = face-to-face; IELO = Indicators of

Engaged Learning Online; LMS = learning management system; N/A = not applicable; OC = online collaboration; PI = Practical Inquiry.

Appendix B: Request to Conduct Study

Email request to the executive director or program-area director

Subject Line: Request to Conduct Study

Dear (name):

Greetings! I am a doctoral candidate in the Virginia Tech Educational Leadership and Policy Studies Program under the supervision of my advisor and committee chair Dr. Carol A. Mullen. I am conducting a research study with leaders in state-level supplemental virtual programs. The purpose of this study is to investigate the experiences of leaders in developing a culturally inclusive community and creating an equitable learning environment in state-level supplemental virtual programs. I am using a qualitative research approach for the study methodology, as this will afford a rich understanding of leadership perspectives in this setting.

May I have your permission to survey and interview a small number of program leaders (one-on-one) and instructional and curriculum leaders (focus group)? I have developed an interview protocol to guide the process and collect data for this study. The interview questions were informed by a broad literature review on online policy, planned online instruction, and course design.

Each interview will be conducted, audio-recorded, and transcribed via the Zoom videoconferencing platform. Data collected from the participants will be confidential and will be securely maintained. The participants and the program will not be identified in the study by name or geographic location. All data will be reported in an aggregated and anonymous manner. The results of the study will be analyzed and shared with you and the participants upon request. Participation is voluntary and would be greatly appreciated.

My practical goal for this study is to represent the perspectives of K–12 supplemental virtual program leaders, who are underrepresented in published research. Virtual leaders' shared experiences and practices can inform approaches to instruction and course design in this unique setting, as well as highlight policy considerations for the field of online program administration.

I appreciate your consideration of this request. My contact information appears below. I look forward to hearing from you.

Sincerely,

Sarah K. Warnick
Doctoral candidate
Virginia Polytechnic Institute and State University
IRB Protocol #23-462

Appendix C: Informed Consent for the Demographic Survey and the Interview

Title of research study: Leadership Experiences with Policy, Online Teaching, and Course Design in State-Level Supplemental Virtual Programs

Principal Investigator: Dr. Carol A. Mullen, Ph.D.; College of Liberal Arts & Human Sciences, School of Education, Educational Leadership and Policy Studies Program at Virginia Polytechnic Institute and State University.

Key Information: The topic of this qualitative case analysis is leadership experiences with community in state-level supplemental virtual programs. The purpose of this study is to investigate the experiences of leaders in developing a culturally inclusive community and creating an equitable learning environment in state-level supplemental virtual programs.

Who can I talk to?

If you have questions, concerns, or complaints, or think the research has hurt you, talk to Dr. Carol A. Mullen, Ph.D.; College of Liberal Arts & Human Sciences, School of Education, Educational Leadership and Policy Studies Program at Virginia Polytechnic Institute and State University.

This research has been reviewed and approved by the Virginia Tech Institutional Review Board (IRB). You may communicate with them if:

- You have questions about your rights as a research subject.
- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team to provide feedback about this research.

How many people will be studied?

We plan to include eight to 30 people in this research study.

What happens if I say yes, I want to be in this research?

- Upon consent, the survey link will be sent. The survey will collect demographic data on program-area directors, instructional leaders, curriculum and design leaders, and instructional designers.
- Surveys will be reviewed to collect demographic data from the participants and to purposefully select the participants to interview from a variety of backgrounds and levels of experience.
- The participants for the one-on-one interviews will be sent an electronic letter with a description of the purpose of the study, a request to participate, and a consent form.
- Data will be collected through scheduled, 45-minute one-on-one or focus group interviews with each interviewee and the co-researcher through the Zoom videoconferencing platform. The interviews will be audio-recorded and transcribed through Zoom.

What happens if I say yes, but I change my mind later?

You can leave the research at any time, for any reason, and it will not be held against you. If you decide to leave the research, any data collected prior to the withdrawal will be destroyed by the researcher. If you decide to leave the research, please contact the principal investigator, Dr. Carol A. Mullen so that the investigator can notify the researcher and the researcher can destroy any data collected prior to the withdrawal.

Is there any way being in this study could be bad for me?

There are no known risks to participating in this study.

What happens to the information collected for the research?

We will make every effort to limit the use and disclosure of your personal information, including research study and medical records, only to people who have a need to review this information. We cannot promise complete confidentiality. Organizations that may inspect and copy your information include the IRB, Human Research Protection Program, and other authorized representatives of Virginia Tech.

If identifiers are removed from your private information or samples that are collected during this research, that information or those samples could be used for future research studies or distributed to another investigator for future research studies without your additional informed consent.

The results of this research study may be presented in summary form at conferences, in presentations, reports to the sponsor, academic papers, and as part of a thesis/dissertation. Federal law provides additional protections of your medical records and related health information. These are described in an attached document.

Can I be removed from the research without my OK?

The person in charge of the research study or the sponsor can remove you from the research study without your approval.

What else do I need to know?

We will offer to share your individual results with you. You may accept or decline these results.

Statement of Consent:

I have read and understood the above information. I have had an opportunity to ask questions and have all my questions answered. By completing the online survey of this study, I signify my consent. Please notify the researcher if you would like a copy of this information to keep for your records.

Appendix D: Email Requesting Participation in the One-on-one Interview

Email to instructional leaders, curriculum leaders, and other program leaders

Subject Line: Request and Consent to Participate in Research

Dear (name):

Greetings! I am a doctoral candidate in the Virginia Tech Educational Leadership and Policy Studies Program under the supervision of my advisor and committee chair Dr. Carol A. Mullen. I am conducting a research study on the experiences of leaders in state-level supplemental virtual programs. I have been given permission by (program name and Executive Director), to conduct this research.

In sending you this email, I would like to ask if you would participate in my current research on virtual program leaders. The purpose of this study is to investigate the experiences of leaders in developing a culturally inclusive community and creating an equitable learning environment in state-level supplemental virtual programs. My practical goal for this study is to represent the perspectives of K–12 supplemental virtual program leaders, who are underrepresented in published research. Virtual leaders' shared experiences and practices can inform approaches to instruction and course design in this unique setting, as well as highlight policy considerations for the field of online program administration.

I am seeking your help with the data collection. Would you be willing to participate in a brief survey (5 minutes) and one 45-minute interview? I have developed an interview protocol to guide the process and collect data for this study. The interview questions were informed by a broad literature review on online policy, planned online instruction, and course design. Each interview will be conducted, audio-recorded, and transcribed via the Zoom videoconferencing platform.

Data collected from the participants will be confidential and will be securely maintained. The participants and the program will not be identified in the study by name or geographic location. All data will be reported in an aggregated and anonymous manner. The results of the study will be analyzed and shared with the participants upon request. Participants in the study must have at least 3 years of experience working in a virtual school. Participation is voluntary and would be greatly appreciated.

Please respond to this email if you are willing to participate in the 5-minute survey and 45-minute interview. I appreciate your consideration of this request.

Sincerely,

Sarah K. Warnick
Doctoral candidate
Virginia Polytechnic Institute and State University
IRB Protocol #23-462

Please complete and return the following consent statement and informational fields below if you are 18 or older and interested in participating in a 5-minute demographic survey and 45-minute one-on-one interview for this study. Each interview will be conducted, audio-recorded, and

transcribed through the Zoom videoconferencing platform. The participants and the program will not be identified in the study by name or geographic location. All data will be reported in an aggregated and anonymous manner.

I am interested in participating in a five-minute demographic survey and 45-minute one-on-one group interview for the study on the experiences of leaders in state-level supplemental virtual programs.

Name:

Program:

Email:

Appendix E: Email Requesting Participation in the Focus Group Interview

Email to curriculum leaders, instructional designers, and other program leaders

Subject Line: Request and Consent to Participate in Research

Dear (name):

Greetings! I am a doctoral candidate in the Virginia Tech Educational Leadership and Policy Studies Program under the supervision of my advisor and committee chair Dr. Carol A. Mullen. I am conducting a research study on the experiences of leaders in state-level supplemental virtual programs. I have been given permission by (program name and Executive Director), to conduct this research.

In sending you this email, I would like to ask if you would participate in my current research on virtual program leaders. The purpose of this study is to investigate the experiences of leaders in developing a culturally inclusive community and creating an equitable learning environment in state-level supplemental virtual programs. My practical goal for this study is to represent the perspectives of K–12 supplemental virtual program leaders, who are underrepresented in published research. Virtual leaders' shared experiences and practices can inform approaches to instruction and course design in this unique setting, as well as highlight policy considerations for the field of online program administration.

I am seeking your help with the data collection. Would you be willing to participate in a brief survey (5 minutes) and one 45-minute interview? I have developed an interview protocol to guide the process and collect data for this study. The interview questions were informed by a broad literature review on online policy, planned online instruction, and course design. Each interview will be conducted, audio-recorded, and transcribed via the Zoom videoconferencing platform.

Data collected from the participants will be confidential and will be securely maintained. The participants and the program will not be identified in the study by name or geographic location. All data will be reported in an aggregated and anonymous manner. The results of the study will be analyzed and shared with the participants upon request. Participants in the study must have at least 3 years of experience working in a virtual school. Participation is voluntary and would be greatly appreciated.

Please respond to this email if you are willing to participate in the 5-minute survey and 45-minute focus group interview. I appreciate your consideration of this request.

Sincerely,

Sarah K. Warnick
Doctoral candidate
Virginia Polytechnic Institute and State University
IRB Protocol #23-462

Please complete and return the following consent statement and informational fields below if you are 18 or older and interested in participating in a 5-minute demographic survey and 45-minute focus group interview for this study. Each interview will be conducted, audio- recorded, and

transcribed through the Zoom videoconferencing platform. The participants and the program will not be identified in the study by name or geographic location. All data will be reported in an aggregated and anonymous manner.

I am interested in participating in a five-minute demographic survey and 45-minute focus group interview for the study on the experiences of leaders in state-level supplemental virtual programs.

Name:

Program:

Email:

Appendix F: IRB Approval Letter



**Division of Scholarly Integrity and
Research Compliance**
Institutional Review Board
North End Center, Suite 4120 (MC 0497)
300 Turner Street NW
Blacksburg, Virginia 24061
540/231-3732
irb@vt.edu
<http://www.research.vt.edu/sirc/hrpp>

MEMORANDUM

DATE: April 20, 2023
TO: Carol Ann Mullen, Sarah Katherine Warnick
FROM: Virginia Tech Institutional Review Board (FWA00000572)
PROTOCOL TITLE: Leadership Experiences in State-Level Supplemental Virtual Programs: A Qualitative Case Study Analysis
IRB NUMBER: 23-462

Effective April 20, 2023, the Virginia Tech Human Research Protection Program (HRPP) determined that this protocol meets the criteria for exemption from IRB review under 45 CFR 46.104(d) category (ies) 2(ii).

Ongoing IRB review and approval by this organization is not required. This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these activities impact the exempt determination, please submit an amendment to the HRPP for a determination.

This exempt determination does not apply to any collaborating institution(s). The Virginia Tech HRPP and IRB cannot provide an exemption that overrides the jurisdiction of a local IRB or other institutional mechanism for determining exemptions.

All investigators (listed above) are required to comply with the researcher requirements outlined at:

<https://secure.research.vt.edu/external/irb/responsibilities.htm>

(Please review responsibilities before beginning your research.)

PROTOCOL INFORMATION:

Determined As: **Exempt, under 45 CFR 46.104(d) category(ies) 2(ii)**
Protocol Determination Date: **April 19, 2023**

ASSOCIATED FUNDING:

The table on the following page indicates whether grant proposals are related to this protocol, and which of the listed proposals, if any, have been compared to this protocol, if required.

Invent the Future

Appendix G: CITI



Completion Date 03-Dec-2022
 Expiration Date 03-Dec-2025
 Record ID 44990313

This is to certify that:

Sarah Warnick

Has completed the following CITI Program course:

Not valid for renewal of
 certification through CME.

Social & Behavioral Research
 (Curriculum Group)

Social & Behavioral Research
 (Course Learner Group)

1 - Basic Course
 (Stage)

Under requirements set by:

Virginia Polytechnic Institute & State University (Virginia Tech)

CITI
 Collaborative Institutional Training Initiative

101 NE 3rd Avenue, Suite 320
 Fort Lauderdale, FL 33301 US
www.citiprogram.org

Verify at www.citiprogram.org/verify/?w4c5382ba-64fc-46b8-9b81-f6e9d47f297b-44990313

Verify at www.citiprogram.org/verify/?w4c5382ba-64fc-46b8-9b81-f6e9d47f297b-44990313.

Appendix H: Demographic Survey

Leader Demographic Survey

Subject Line: Request to Participate in the Demographic Survey

Leadership Experiences with Policy, Online Teaching, and Course Design in State-Level Supplemental Virtual Programs

The purpose of this study is to investigate the experiences of leaders in developing a culturally inclusive community and creating an equitable learning environment in state-level supplemental virtual programs. Completing this brief survey will help me collect demographic information to purposefully select leaders for one-on-one and focus-group interviews who represent a variety of backgrounds and experiences. Please answer the following demographic survey questions if you are 18 years or older and are willing to participate in this study.

(Obtain consent at the beginning of the online survey. If the participant selects *I Agree*, the participant will continue with the survey. If the participant selects *I Do Not Agree*, the participant will exit the survey.)

Please answer the following demographic survey questions.

1. Are you 18 years or older and willing to participate in the following demographic survey?
 - a. Yes
 - b. No

2. Level of education:
 - a. Bachelor's degree
 - b. Master's degree
 - c. Educational Specialist degree
 - d. Doctoral degree
 - e. Other

3. Race and/or Ethnicity (Select all that apply):
 - a. Alaska Native
 - b. American Indian
 - c. Black or African American
 - d. Hispanic or Latino
 - e. White or Caucasian
 - f. Other

4. Years working in a virtual education setting:
 - a. 0–2
 - b. 3–5
 - c. 6–8

- d. 9–11
 - e. 12–14
 - f. 15 or greater
5. Current job title: (short answer format)
6. Years working in your current leadership role:
- a. 0–2
 - b. 3–5
 - c. 6–8
 - d. 9–11
 - e. 12–14
 - f. 15 or greater

Thank you for your participation in the survey. Please complete the information below if you are willing to participate in a 45-minute interview. Each interview will be conducted, audio-recorded, and transcribed through Zoom. The participants and the program will not be identified in the study by name or geographic location. All data will be reported in an aggregated and anonymous manner. If willing, you will be contacted by email to schedule the interview.

I am interested in participating in a 45-minute interview for the study on the experiences of leaders in state-level supplemental virtual programs.

Name:

Program:

Email:

Appendix I: Interview Protocols

Protocol for One-on-One Interviews With Program-Area Directors, Curriculum and Design Leaders, and Other Program Leaders

Interviewer	<p><i>The interviewer will welcome the participant, share the purpose of the interview, and obtain verbal consent to participate and record the interview.</i></p> <p>Thank you for participating in this interview. The purpose of this study is to investigate the experiences of leaders with developing a culturally inclusive community and creating an equitable learning environment in state-level supplemental virtual programs. As a virtual program leader, your experiences and practices can inform leadership approaches in this unique setting, as well as highlight policy considerations for the field of online program administration. This interview will take approximately 45 minutes and will focus on community, instruction, and course design practices related to the research purpose.</p> <p>May I have your consent to audio record and transcribe the interview? A copy of the transcript will be sent to you afterward for verification. <i>(Wait for participant's response and record consent in spreadsheet.)</i></p> <p><i>The interviewer will share norms for the one-on-one interview so that the participant feels comfortable participating as freely and fully as they choose.</i></p>
<i>Area of responsibility</i>	In your experience as a (job title), what program areas do you oversee?
<i>Course Design</i>	<p>Please describe your course design model. What are some barriers to equity in course design for students in the communities and schools you serve? As barriers are noted, I will ask at least two follow-up questions regarding strategies to overcome shared challenges.</p> <p>In your experience, what course design practices engage students of diverse backgrounds and abilities? As practices are noted, I will ask at least two follow-up questions.</p>
<i>Instruction</i>	<p>Please describe your instructional model. What are some barriers to equity in instruction for students in the communities and schools you serve? As barriers are noted, I will ask at least two follow-up questions regarding strategies to overcome shared challenges.</p> <p>In your experience, what instructional practices do teachers use to engage students of diverse backgrounds and abilities? As practices are noted, I will ask at least two follow-up questions.</p>
<i>Community</i>	<p>Please describe the online learning community at (program name). What are some ways that leaders, faculty, and staff in your program develop community? As strategies to develop community are shared, I will ask at least two follow-up questions.</p> <p>What are some benefits and challenges to developing a culturally inclusive community for students in the online environment? As benefits and challenges are noted, I will ask at least two follow-up questions.</p>
<i>Closing question</i>	Is there anything else that you can tell me that would add to this study?
<i>Interviewer</i>	Thank you for participating in this interview. After reviewing and finalizing the recording transcript, I will share it with you to verify.

Protocol for Focus Group Interviews With Curriculum and Design Leaders, Instructional Designers, and Other Program Leaders

Interviewer	<p><i>The interviewer will welcome the participants, share the purpose of the interview, and obtain verbal consent to participate and record the interview.</i></p> <p>Thank you for participating in this interview. The purpose of this study is to investigate the experiences of leaders with developing a culturally inclusive community and creating an equitable learning environment in state-level supplemental virtual programs. As a virtual program leader, your experiences and practices can inform leadership approaches in this unique setting, as well as highlight policy considerations for the field of online program administration. This interview will take approximately 45 minutes and will focus on community, instruction, and course design practices related to the research purpose.</p> <p>May I have your consent to record and transcribe the interview? <i>(Wait for each participant's response, and record consent in the spreadsheet.)</i></p> <p><i>The interviewer will share norms for the focus group interview so that all participants feel comfortable participating as freely and fully as they choose.</i></p>
<i>Area of responsibility</i>	<p><i>The interviewer will ask each participant to introduce themselves and share their area of responsibility.</i></p>
<i>Course Design</i>	<p>Please describe your course design model. What are some barriers to equity in course design for students in the communities and schools you serve? As barriers are noted, I will ask at least two follow-up questions regarding strategies to overcome shared challenges.</p> <p>In your experience, what course design practices engage students of diverse backgrounds and abilities? As practices are noted, I will ask at least two follow-up questions.</p>
<i>Instruction</i>	<p>Please describe your instructional model. What are some barriers to equity in instruction for students in the communities and schools you serve? As barriers are noted, I will ask at least two follow-up questions regarding strategies to overcome shared challenges.</p> <p>In your experience, what instructional practices do teachers use to engage students of diverse backgrounds and abilities? As practices are noted, I will ask at least two follow-up questions.</p>
<i>Community</i>	<p>Please describe the online learning community at (program name). What are some ways that leaders, faculty, and staff in your program develop community? As strategies to develop community are shared, I will ask at least two follow-up questions.</p> <p>What are some benefits and challenges to developing a culturally inclusive community for students in the online environment? As benefits and challenges are noted, I will ask at least two follow-up questions.</p>
<i>Closing question</i>	<p>Is there anything else that you can tell me that would add to this study?</p>
<i>Interviewer</i>	<p>Thank you for participating in this interview.</p>