Review of Online Teaching and Course Design Through K–12 Leaders' Practices

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Abstract
Purpose: *Leaders of K–12 educational systems contribute to the learning environment through their actions and guidance. The discussion of leadership practices addresses online teaching and course design through the lens of two theories: Community of Inquiry (CoI) and Academic Communities of Engagement (ACE). An original conceptual framework is offered.*
Methods: *This literature review (conceptual paper) examines planned online course design and instructional practices that influence K–12 student engagement and learning outcomes.*
Results: *Key The synthesis of sources suggests that instructional practices aligned with the CoI and ACE facilitate presence and foster communities of support that positively impact student engagement, learning, attendance, and satisfaction.*
Implications: *The analysis provided could inform the work of leaders in online instructional contexts and future research within K–12 systems.*

Keywords: *Academic Communities of Engagement (ACE), Community of Inquiry (CoI), K–12 Leadership Practices, Online Course Design, Online Learning*

JEL Classification: *I20*

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1 INTRODUCTION

While online educators have navigated exceptional growth and change since the early 2000s (Watson, 2022), online leaders have been tasked with ensuring instructional quality in the virtual environment (LaFrance & Beck, 2014). As made evident on a large scale during the COVID-19 pandemic, many young learners struggled with isolation, engagement, and overall academic performance in online courses (Kim & Fienup, 2022). If courses delivered remotely can help improve equity and access to educational opportunities in K–12 schools, then online leaders need to be able to address barriers to learning in virtual spaces.

Another problem addressed here is that empirical evidence pertaining to K–12 online leading, teaching, and learning, including instructional standards, is scarce (Borup et al., 2018; Jackson, 2017), which implies a theory–practice gap. This article, which is a literature review, aims to explain how online instruction and course design may influence K–12 students' experience in virtual coursework, with spillover to higher education. The question guiding the analysis was, How do planned online course design and instructional practices influence K–12 student engagement and learning outcomes? Stated plainly, what matters most? An applicable definition of *student engagement* refers to how learners spend time in their academic courses, and how teachers encourage interaction and desirable learning (Bigatel & Edel-Malizia, 2017).

The motivation for undertaking this review stems from the first author's work as a K–12 leader and teacher with a state virtual program, and the coauthor's research on online learning as educational leadership faculty. Both teach in fully online programs at different levels of the educational system in the United States, and share interest in leaders' role in online situations.

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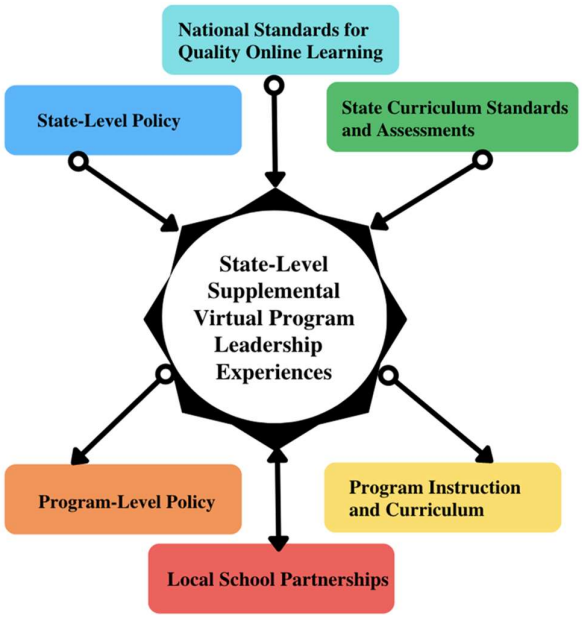
2 CONCEPTUAL FRAMEFORK

A conceptual framework, developed by the authors, emerged from the initial review and use of theories—the Community of Inquiry (CoI) and Academic Communities of Engagement (ACE)—as lenses for examining research on K–12 online learning. Presented from an online leader's view, the State-Level Supplemental Virtual Programs (SSVP) framework (Figure 1) displays six factors that influence experiences of state-level supplemental virtual programs: The first three factors shape leaders' work (national standards, state policy, and curriculum standards and assessments), and the others (program-level policy, program instruction and curriculum, and local school partnerships) are what leaders influence through their decisions and practices.

Figure 1.
State-Level Supplemental Virtual Programs Framework (Authors, 2023)



Factors that Influence Leaders

As shown in the figure (framework), leaders in state-level virtual schools attend to three types of information: (1) National Standards for Quality Online Learning (NSQOL, 2019); (2) state policy; and (3) state curriculum standards and associated assessments. The NSQOL consists of three versions of the standards for online teaching, programs, and courses. A benchmark for online education since 2007, the NSQOL were revised in keeping with the expectation that the standards keep pace with changing instructional practices (Jackson, 2017). Online leaders use the NSQOL (or a version of it) to inform their teaching, course design, and professional development (PD). Accountability infuses state policy, including leader and teacher preparation (Rice & Skelcher, 2018). As represented by the figure, online leaders comply with state policy in instruction and standards when designing program curriculum and measuring learning.

Factors that Leaders Influence

The figure also represents three areas that leaders directly influence in their work with faculty, staff, and students: program instruction and curriculum; program-level policy; and local school partnerships. Leaders work with faculty to plan, design, and implement online curriculum and instruction (Oliver et al., 2010; Wasfy et al., 2021); manage the learning environment's infrastructure (McLeod & Richardson, 2018); and oversee which instructional tools to use in virtual courses (Gacs et al., 2020; González-Lloret, 2020). The authors' 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). School leaders can aid student success through school improvement and policy (McLeod & Richardson, 2018). Leaders must consider state policy requirements when creating program-level policy.

Finally, leaders at state-level virtual schools partner with school personnel (mentors, etc.) to support students (Watson, 2022). The conceptual framework illustrates how leaders bridge the virtual and local school when working with students, families, and personnel. Communication and collaboration are reciprocated between virtual school leaders and partnering local school personnel, as both parties have a stake in student success. In some cases, the local school may express specific student or program needs that inform leadership decisions.

Established Theories

The authors' conceptual framework benefitted from theories (CoI and ACE), having acted on Lokey-Vega et al.'s (2018) logic that examining literature using established theory can clarify online leaders' roles and responsibilities. Garrison et al. (2000) posited that three constructs known as presences—teaching, social, and cognitive—were essential to a CoI. Drawing on scholarship, they suggested that positive learning occurs in environments where the presences are not only available but intersect in empowering ways for online learners. The facilitation of these presences may enhance or inhibit the learning experience (Author, 2020). CoI has been well-documented in online studies (Akcaoglu & Akcaoglu, 2022; Author, 2021; Borup et al., 2020; Carillo & Flores, 2020; Kumi-Yeboah et al., 2018; McHugh et al., 2020; Miller et al., 2020; Rubio et al., 2018). While the CoI initially referred to discussion-based communication in university computer science courses, it has since been applied widely to academics, including K–12 online learning (Rothstein & Haar, 2020).

Developing the CoI's interdependent presences, Borup et al. (2020) proposed ACE for theorizing K–12 learners' online participation relative to others' engagement. The addition of parent engagement recognized the role of family in supporting learners (Kumi-Yeboah et al., 2018). According to Lokey-Vega et al. (2018), ACE offers a window onto how young people participate in online learning contexts to detect areas for improvement. A supposition is that engagement increases when students are supported in their instructional environment and through personal communities (Borup et al., 2020; Graham & Halverson, 2022; Tuiloma et al., 2022). Practitioners have tested the ACE theory, leading to a refined

model that focuses on specific actions that support learners (Molnar et al., 2019).

Search Procedures

Databases (EBSCOhost, etc.) were searched until April 2023 via a university library utilizing keywords (*online learning,* etc.). Peer-reviewed journal articles and international studies were found, with US-based sources mainly reviewed. Publications with a higher education focus proved more plentiful (than K–12 studies), and were reviewed when topically relevant. Overall, 61 peer-reviewed articles, 15 books and chapters, and 10 other sources were analyzed. Documents from US states that provided information from situated contexts were incorporated. Classical works were included in the analysis—namely the CoI theory—which researchers consider foundational to the field.

3 DISCUSSION & FINDINGS

As discovered from this review, online leaders oversee multiple areas of responsibility and manage policy-based accountability requirements for attendance, teacher certification and training, instruction, and curriculum. Building online communities and facilitating the presences are important considerations for student success. These themes are next described in some detail.

Leadership Considerations for Online Learning

The administration of K–12 online programs is an emerging field, thus limited studies have evaluated leadership practices for planned online instruction and course design at this level (Barbour et al., 2018; Richardson et al., 2015). Most K–12 research on leadership has occurred within the context of brick and mortar institutions involving in-person learning, which sparked the call for research and training that advance online leadership (McLeod & Richardson, 2018). Online field experiences during administrator preparation programs may expose preservice leaders to unique aspects of online leadership (McLeod & Richardson, 2018; Richardson et al., 2015). While higher education studies have informed K–12 online leaders of ways to work with youth, approaches and needs differ with adults (Borup et al., 2020).

Leading during the pandemic. With the changes in instructional models for traditional and virtual schools forced by the pandemic, innovation has occurred in four phases: (1) a rapid transition to altered instructional models; (2) integration of supports to implemented models; (3) an extended transition between face-to-face (F2F) and online models; and (4) an emerging new normal with improved infrastructure supporting online models (Barbour, 2021). Pandemic-induced change has also altered higher education, and a research-based approach to inform online program models has been recommended (Carillo & Flores, 2020). Masry-Herzallah and Stavisky (2021) put the spotlight on transformational leadership, having found that certain behaviors (e.g., charismatic influence) can be effective during change and crisis. Specifically, leader communication that provides a stable foundation for promoting instructional innovation can encourage online instructors' success (Wasfy et al., 2021).

Essential knowledge and skills. Online leaders must be prepared to guide instruction, training, course development, and student support that are unique to virtual environments (McLeod & Richardson, 2018). Similarly, online directors in higher education oversee staffing, advising, recruitment, curriculum management, assessment, and evaluation (Wasfy et al., 2021). Essential knowledge for leaders includes understanding research-based standards, pedagogy, technology, and course design principles for online education. Additionally, leaders need to be well-versed in online platforms to assist faculty and make informed decisions about infrastructure (McLeod & Richardson, 2018). Transparent communication practices have been advised to guide faculty, particularly when navigating change (Author, 2023; Wasfy et al., 2021). At the K–12 level, frequent leadership communication with families reinforces key information and expectations of student (Author, 2023). 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. Eight course development teacher teams at the North Carolina Virtual Public School, a state-run online class program in North Carolina, participated in research that examined what supports content developers of virtual courses need. Oliver et al. (2010) determined that these developers had benefited from guidance around what to include in courses (adequate practice to account for student needs, etc.). It was recommended that leaders provide developers with training on course design tools, a learning management system (LMS), and copyright compliance, as well as regular feedback, encouragement, and technical expertise.

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, standards of quality for seat time and attendance, family involvement, and standards-aligned curriculum (Rice & Skelcher, 2018). Key policy themes for K–12 online learning include such accountability measures as teacher preparation, standards and analytics, and equity and access. Archambault et al. (2016) reported that eight US states had online learning standards, whereas Georgia and Idaho offered a voluntary online teaching licensure endorsement. According to Rice and Skelcher (2018), the accountability movement in education recognizes that attendance alone is insufficient to demonstrate student learning. Thus, state and national policies call for evidence-based learning established through standards-aligned instruction and measured through learner analytics.

Student attendance. An important policy consideration is attendance, which is tied to state funding. Measuring attendance in online learning has been addressed by policy in some US states (Molnar et al., 2019; Rice & Skelcher, 2018). The Colorado Department of Education's (CDOE, n.d.) policy addressed the requirement of compulsory attendance in online classes, with student logins and hours accrued in a course log constituting metrics for reporting attendance. On the other hand, the Ohio Department of Education's (2018) online attendance policy was based on demonstrated learning

mastery, not seat time. Online programs and schools are shifting to mastery-based learning and indicators (Watson, 2022).

In the absence of state policy on virtual learning in Virginia, the Virginia Department of Education (VDOE, 2021) issued a report to guide virtual learning statewide. As such, division leaders were directed to establish local policies for measuring attendance using timed or task-based meaningful interactions. The idea was to allow flexibility for local divisions to quantify attendance measures for online learning. Leaders were asked to define the frequency of meaningful interactions and attendance checks.

Student placement. To increase parents' engagement and support, and boost student achievement and graduation rates, Borup (2018) called for policymakers to articulate the roles and responsibilities for parental involvement in K–12 online education. The VDOE's (2021) guidelines reinforced school divisions' responsibility to develop policy for parental input on the appropriate instructional environment for learners and establish benchmarks for online participation. In the guidelines, a locally driven intervention process was proposed to identify inadequate student progress resulting in a return to the physical classroom, which acknowledged that virtual learning is not an appropriate placement for everyone. At a minimum, the VDOE expected divisions to implement progress evaluations for students with disabilities.

Online Teachers' Role

National standards and research depict online teachers' roles. Regarding online educational leaders, they are responsible for teacher supervision and evaluation (McLeod & Richardson, 2018). The standards generally inform needs for PD 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 last decade as pedagogy, tools, platforms, and models have evolved. Rapid evolution in the field has overtaken an accurate picture of what online teachers and leaders do in their work, as well as updates to national standards (Jackson, 2017).

National Standards for Quality Online Teaching

A shift in the benchmarks provided in national standards for online teaching has shifted over the last 3 decades. The 2019 National Standards for Online Teaching (NSQOT), a version of the larger set of standards collectively known as NSQOL, were revised to reflect current research and feedback (Jackson, 2017). In recognition of changes in the field, the standards were rewritten with a focus strictly on fully online instruction. Jackson (2017) observed that *presence* was absent from the 2011 version of these standards (i.e., NSQOT). The updated version (2019) of the NSQOT recognized *online presence* in standard B (digital pedagogy) and standard C (community building). Also, the role of online teachers was expanded to include specific facilitation tasks for establishing community in virtual classrooms, as well as adapting instruction to meet diverse student needs. The 2019 NSQOT articulated the teacher's role in fostering learners' technological competency, and responsibility for guiding classes to navigate the Internet, demonstrate academic integrity, and communicate with respect. Another revision acknowledged that the instructor is not always the person handling course design.

Preservice Teacher Preparation

Teacher preparation is a focus in online education policy (Rice & Skelcher, 2018), and online leaders routinely consider qualifications and certification when making staffing decisions (McLeod & Richardson, 2018). Universities' options that prepare prospective teachers for working online are typically limited (Gallup et al., 2021). In a study of teacher preparation programs at 363 US-based institutions offering field experiences in online courses, Archambault et al. (2016) noted that only 15 programs (4% of respondents) had a virtual practicum option. Program leaders' reasons for not having an online experience included limited state and local options, and inappropriate placement to prepare candidates for classroom teaching.

Gallup et al. (2021) and Kumi-Yeboah et al. (2018) encouraged partnership development in higher education with virtual programs to build capacity for preservice teachers' success. Proposed observation protocols included (a) learning experiences tied to the NSQOL, (b) organization and personalization of learning, (c) communication, (d) assessment, and (e) course design (Gallup et al., 2021). A survey of 360 preservice teachers in Turkey found that self-efficacy to teach online was influenced by understandings of design, facilitation, and technology (Akcaoglu & Akcaoglu, 2022). Participants' beliefs in their ability to choose online teaching as a career were influenced by how they saw teaching presence. Offering online coursework and experiences to support preservice teachers' future teaching was advised.

Online Teacher Training and PD

Teachers and content developers often receive limited training in technology tools or LMS usage at the higher education level. In contrast, several K–12 online programs, among them the Virtual High School Collaborative (based in Massachusetts with further reach) and Florida Virtual School (operating in the southeastern USA), provide extensive training for teachers and developers during induction (Barbour et al., 2018). One way to assist educators transitioning to online instruction is through PD directed at online pedagogies and learning technologies (Akcaoglu & Akcaoglu, 2022; et al., 2019; Russell, 2020). Instructional designers can guide teacher understanding of educational tools and LMSs for online courses (Barbour et al., 2018; McGee et al., 2017; Russell, 2020). Gurley (2018) found that teachers who completed training felt more confident about facilitating online learning, at least according to the survey data collected from 86 adjunct instructors at two private universities.

Essential knowledge. Recommendations from the research are that online teachers acquire knowledge related to content-specific pedagogy (Russell, 2020), as well as accessibility supports (Gacs et al., 2020), course design (Akcaoglu & Akcaoglu, 2022; Barbour et al., 2018), and copyright compliance (Gacs et al., 2020). Author (2021) proposed educating teachers on facilitating interaction and nurturing learning in synchronous instruction, while Kumi-Yeboah et al. (2018) thought that teacher PD was necessary for addressing online collaborative learning among students and the relevance of multicultural experiences to performance.

Benefits of collaboration. Online teachers benefit from working in a collaborative environment where they can share instructional strategies (McGee et al., 2017). A community of practice is likely successful to the extent that participants learn together, not just build knowledge or discuss issues. A collaborative PD model where educators exchange instructional ideas and develop materials with instructional designers tends to increase teachers' skills and confidence (McGee et al., 2017).

Developing expertise. Analyzing experienced online teachers' responses in higher education, McGee et al. (2017) identified essential supports for developing expertise in online instruction. These included (a) additional time for course design, (b) training that models best practices, (c) mentoring, and (d) feedback from peers in a community of practice. They surmised that the process of learning—in effect, developing expertise—was more valuable than specific skills for online teaching.

Collegial presence. Sanders and Lokey-Vega (2020) examined the effectiveness of teaching practices aligned to a CoI at a virtual high school. Through four teacher study participants, it was found that collaboration with parents, colleagues, supervisors, and support staff had brought about collegial presence. *Collegial presence* was defined as colleagues' meaning-making process and work together to benefit online students and establish (or elevate) teaching, social, and cognitive presence. An assertion was that collegial presence—critical for student success—is an important element in the K–12 educational experience.

Online Teacher Evaluation

Online teaching tasks differ from F2F and blended instruction, which is why evaluation practices need to fit the roles and responsibilities associated with working in virtual environments (Gacs et al., 2020; Thomas & Graham, 2019). A research deficit exists for teacher evaluation relative to the preparation of preservice teachers for online instruction (Gallup et al., 2021). Contributions to this effect include Thomas and Graham's (2019) content analysis of observational rubrics that address online teaching. After analyzing data from seven postsecondary institutions, they recommended that observational rubrics assess instructional behaviors, contain items pertaining to building community with students, and provide a comprehensive measure of online teaching competencies. To avoid bias in evaluation practices between F2F and online modalities in higher education, Gacs et al. (2020) called for evaluations to be implemented by colleagues with online experience. In the K–12 context, online leaders could benefit from evaluative instruments unique to the online setting that measure teacher knowledge, skills, and performance (McLeod & Richardson, 2018).

Teaching Presence and Online Instruction

School leaders positively impact student success through school improvement and policy (McLeod & Richardson, 2018). Working closely with teachers, K–12 leaders use benchmarks that guide instruction and influence the overall learning climate. Effective leaders encourage online teaching presence, which involves the cultivation of student learning on intended outcomes in three areas: (1) planning and design of course content and lessons, (2) facilitation of learning activities, (3) and direct instruction (Garrison et al., 2000, 2010). According to Jackson (2017), cultivating teaching presence necessitates a comfortable, organized learning environment for students and positive interactions during direct instruction. Garrison et al.'s (2010) analysis of teaching presence was limited to computer conferencing and discussion boards. With the changes in instructional technology, Rubio et al. (2020) found that teaching presence established through various communication tools advanced online learning in (language) courses.

Influence of Teaching Presence on Engagement

The ACE's concept of teacher engagement is similar to teaching presence in the CoI, although it differs in a few ways for younger learners (Borup et al., 2020). According to this model, effective K–12 teachers engage students and their families through regular communication, and, in turn, school and personal communities support students. Thus, in the K–12 online learning environment, different individuals fulfill instructional roles (designing content, etc.). By monitoring and motivating participation in course activities, K–12 teachers nurture student engagement and learning (Borup et al., 2020).

Student attendance. Challenges for K–12 students that negatively affect their attendance and assignment completion include poor student technology skills, little parental support, and inconsistent expectations for online learning (Author, 2023; Kim & Fienup, 2022). Importantly, teacher interaction with students can influence their motivation and attendance (Kurnaz et al., 2018). Teachers and families have proven essential for connecting students to academic content (Kim & Fienup, 2022), which is consistent with the ACE model's communities of support (Borup et al., 2020). Teacher-implemented incentives (virtual rewards, etc.) have boosted participation and attendance (Author, 2023; Kim & Fienup, 2022). Regular attendance increases access to learning opportunities, and attendance monitoring has proven a reliable indicator of intervention needs (Kim & Fienup, 2022). Noting that students with poor attendance in online courses had lower grades, Author (2023) called for leaders to enforce policy requirements.

Teacher interaction. Moore's (1997) theory of transactional distance can inform K–12 online instructional practices, according to researchers (LaFrance & Beck, 2014). As posited, learners perceive varying degrees of distance between themselves and their instructors, depending on such dynamics as the extent to which they interact. Courses with a low transactional distance offer higher-touch instructor presence, and more choices for learners. The theory and insights from research on transactional distance can be personalized for children.

Impact of teaching presence on students. Garrison et al. (2010) anticipated that although instructional models vary, teaching presence remains a contributing factor in overall student satisfaction and perceived learning in the online environment. Comparing teaching presence for F2F and online modalities in higher education Spanish courses, Rubio et al. (2018) found that students more actively managed their learning when working on asynchronous tasks. This suggested that a shift in the teacher's role from directly monitoring and implementing F2F instruction to managing online activities can encourage student autonomy.

An investigation of teacher presence in an MBA program focused attention on impact relative to student satisfaction and faculty ratings. McHugh et al. (2020) studied changes made to instructional delivery with guidance from a course designer. Over the 2-year period, modifications included condensing the syllabus, changing discussion board facilitation strategies, and beginning the course with synchronous videoconferencing. The small changes made to refine online instruction resulted in improved perceptions of teacher presence and higher student satisfaction as indicated by faculty evaluations.

Teaching Presence Through Communication and Feedback

Teaching presence is established through frequent, positive communication with learners and feedback (Akcaoglu & Akcaoglu, 2022; Author, 2020, 2021; Gacs et al., 2020; Garrison et al., 2010; Jackson, 2017). Consistent communication via course messaging, discussion boards, and synchronous instruction fosters presence in the online classroom (Rothstein & Haar, 2020). A study comparing online and F2F versions of advanced Spanish courses found that university students performed similarly; also, responsive communication practices and weekly web-conferencing met with their approval (Enkin & Mejías-Bikandi, 2015). The quality of instructor communication and capacity to connect with university students from different backgrounds has improved satisfaction rates associated with online learning (Rothstein & Haar, 2020).

Timely, corrective feedback plays a role in guiding student learning in the virtual environment (Barbour et al., 2018; 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. They suggested using a variety of assessments in courses that allow for personalized instructor feedback. Ketchum et al. (2022) reported mixed results with instructors' experiences of using video feedback in online courses. While some instructors felt that it was transactional and time-consuming, others enjoyed the improved social presence with students. Calling attention to student error can discourage participation in communicative activities (Payne, 2020; Russell, 2020), whereas specific, encouraging feedback can enhance teaching presence and support critical thinking (Author, 2020, 2021).

Online Class Size and Student Outcomes

Class size is debated in virtual learning, although few studies touch upon it. Yet, it is an important consideration for online leaders in determining program models and staffing. According to Zhang et al. (2018), class size decisions by leaders appear to be influenced by such factors 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 align with F2F policies in some areas. Barbour and LaBonte (2019) reported that online class size in Ontario followed maximum classroom limits. But Molnar et al. (2019) with the National Education Policy Center in Colorado indicated that teaching loads at private virtual schools through K12, Inc. ranged from 60 to 72 students per elementary teacher, and 225 to 275 students per secondary teacher. As concluded, high teaching loads inhibit direct student contact with online teachers.

Lin et al.'s (2019) research at the secondary level perhaps offers greater subtlety. They examined the effect of self-paced asynchronous class sizes on learning outcomes, as measured by the final course grade, with 12,032 high school students. As revealed, the maximum class size supporting optimal achievement varied widely across content areas. While they suggested that large online classes may support positive student outcomes in some content areas, they cautioned against using the findings in a prescriptive manner to determine policy for class sizes.

However, Zhang et al. (2018) have concluded that exceptionally small classes appear to negatively affect learning outcomes, given the more limited interaction with students and instructor. Both Lin et al. (2019) and Zhang et al. (2018) confirmed that students in small classes (fewer than 10 members) had lower end-of-course grades in several subject areas, which was attributed to minimal learner–learner interaction. As determined, extremely small or large class sizes can undermine grades. Further research grounded in theory (CoI and ACE) has been recommended for examining class size in K–12 settings (Zhang et al., 2018).

Social Presence and Community

Online leaders develop organizational policies for faculty and students that encourage digital interaction and build community (VDOE, 2021). They may also make decisions about the communication tools and infrastructure that support learning within the LMS (McLeod & Richardson, 2018). Garrison et al. (2000) initially defined *social presence* as the ability of course participants "to project themselves" (p. 94). Later, they (Garrison et al., 2010) explained that social presence involves feeling part of a community in a trusting space with effective communication and interaction. Online instructors who build community among learners and cultivate social presence (providing timely feedback and responses to queries, etc.), tend to experience higher engagement (Akcaoglu & Akcaoglu, 2022; Garrison et al., 2000, 2010).

In the ACE framework, Borup et al. (2020) expanded on the concept of course community by proposing that personal communities also support student success. Personal community consists of one's own networks, whereas course community includes teachers, administrators, and peers. Students in dual/multiple communities benefit from enhanced benefits, and affective, behavioral, and cognitive engagement (Borup et al, 2020; Tuiloma et al. 2022). In this model, both communities reinforce participant autonomy, engagement, and success.

Considerations for Building Community

Building community through both asynchronous and synchronous instruction, although challenging, is essential for engaging students and propelling their growth (Bigatel & Edel-Malizia, 2017; Borup et al., 2020; Enkin & Mejías-Bikandi, 2015; González-Lloret, 2020; Hammond, 2017; Rothstein & Haar, 2020). From a leadership perspective, community building in digital spaces involves configuring technologies in such a way as to coordinate participation, facilitate sharing, and manage tasks. The NSQOT's (2019)

Standard C: Community Building recognized the role that community plays in online learners' experience.

After interviewing 40 secondary students from minoritized populations in a fully virtual environment, Kumi-Yeboah et al. (2018) determined that collaborative activities had proven beneficial to their learning. Other positive aspects of their online experience were access to learning materials online, parental support, open communication with teachers, and interactions with peers. Participants also reported that a positive online environment with fewer distractions had reduced behavioral issues. Conversely, it was also found that when "social presence" and "cultural inclusion" proved lackluster, the online course experience may not work well for some of minoritized students. The need for teachers to foster an inclusive course community for students from different cultural backgrounds was highlighted (see also Rothstein & Haar, 2020).

Building Community Through Synchronous Instruction

Technology tools that promote interaction are an integral component of building community in online courses, and their use must complement a well-planned curriculum (Gacs et al., 2020; González-Lloret, 2020). In research involving 15 students completing a dental hygiene program, the use of video cameras during synchronous discussions facilitated higher cognitive presence (Molnar & Kearney, 2017). However, as Rothstein and Haar (2020) found, when students do not turn on their video cameras during synchronous instruction, visual cues occurring during interpersonal communication get lost, which can impact community-building and course outcomes. Thus, they encouraged camera use. This recommendation fits with Payne's (2020) point that instructors who acknowledge student contributions energize groups and enrich rapport.

Isolation and Communities of Support

A commonly cited concern in online learning is student isolation (Bigatel & Edel-Malizia, 2017; Jackson, 2017; Kumi-Yeboah et al., 2018; Wasfy et al., 2021). In fact, isolation is a main reason for attrition from online courses and programs (Borup et al., 2020; Goertler & Gacs, 2018; Russell, 2020); thus, program retention is a leadership goal. In some online schools and programs, students may work independently and asynchronously, graduating from secondary school without ever having worked collaboratively with other learners (Borup & Archambault, 2022). Other contributors to attrition are confusion with course technologies (Barbour et al., 2018; Goertler & Gacs, 2018) and anxiety with learning through an online platform (Russell, 2020; Rothstein & Harr, 2020).

Consequently, impacts on student participation include disassociated affective engagement (perhaps due to isolation), course content considered uninteresting, and having a teacher to which one cannot relate (Borup et al., 2020). Social and teaching presence may not always adequately foster the relationships needed to sustain affective engagement (Tuiloma et al., 2022). Small group instruction can cultivate this connection, enabling students to feel invested in their course community. Purposeful facilitation helps set the tone for their online learning behaviors. To gauge engagement, teachers use LMS tools to pinpoint where they need to instructionally intervene; they also analyze behavioral analytics (login patterns, etc.), and monitor interactions and assignment progress/completion (Borup et al., 2020).

Online students benefit from course facilitators who are trained on LMSs, instructional tools, strategies, and expectations that enable them to support learning (Borup & Stimson, 2019). Being motivational and modelling specific behaviors and language are but a few helpful instructional facilitative behaviors (Kumi-Yeboah et al., 2018). In an analysis of online learning for elementary children, Liao et al. (2021) reported that teachers' communication with families and use of developmentally appropriate tools proved instrumental for achieving success.

Cognitive Presence and Course Design

Online leaders manage the curriculum, assessments, and learning tools implemented in the virtual environment (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).

Garrison et al. (2000, 2010) defined *cognitive presence* as participants' ability to make meaning through ongoing communication. Their practical inquiry model for initiating cognitive presence involves a triggering event, exploration, integration, and resolution, and the role of teachers in moving students from exploration to applying knowledge. Cognitive engagement is associated with internal processes leading to student understanding. Borup et al. (2020) further noted that this kind of engagement aligns with instruction and collaboration. In this model, teachers or knowledgeable students deliver instruction synchronously or asynchronously. Cognitive engagement is exhibited when students collaborate with peers to develop knowledge or skills, or create something. Miller et al. (2020) cautioned against futile uses of collaboration.

Online Course Design

Researchers recommend using standards such as Quality Matters or other frameworks that encourage quality in course design practices (Baldwin et al., 2018; Barbour et al., 2018; Bigatel & Edel-Malizia, 2017; Gacs et al., 2020). The NSQOT (2019) recognized the role that planned course design plays in an online learner's experience with Standard H: Instructional Design. Since the teacher may not be the course designer in some virtual models, Standard H may be considered optional. 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.'s (2018) review of higher education curriculum standards identified promising practices in course design around which online instructors (a) communicate course policies and objectives, (b) provide for an intuitive layout and navigation, (c) integrate technology that promotes engagement, (d) incorporate activities to build community, (e) account for student accommodations, (f) align assessments to learning objectives, and (g) communicate assessment processes.

Tools and modality. Barbour et al. (2018) advised K–12 online educators to consider all course instructional tools during the design process to involve students more fully. Combining synchronous and asynchronous tasks may help with engaging them cognitively (González-Lloret, 2020).

Author (2020) found that learning was equally strong for F2F and online master's cohorts, and that cognitive orientation as evidenced by the ideas expressed through student writing was consistent across modalities.

Universal Design for Learning (UDL) and Accessibility

A planning framework, the UDL helps teachers embed support for effective instruction. Course design that considers UDL principles, accessibility, and assistive technologies mindfully accounts for students with disabilities' needs while personalizing their learning (Gacs et al., 2020; Stella & Corry, 2017). National standards (e.g., NSQOT, 2019) recognize the online teacher's role in accommodating special needs in course design and implementation, including with visual and auditory supports (closed captioning, etc.).

Collaboration in Online Environments

Opportunities for learner–learner collaboration as part of planned course design deepen cognitive and social presence (Bigatel & Edel-Malizia, 2017; Gacs et al., 2020). Hammond (2017) found that collaboration is essential to students' learning and that the act of explaining a position produces knowledge. Collaborative tasks (group projects, etc.) also enrich community in online environments (Hammond, 2017; Jackson, 2017). Collaborative learning tasks serve a dual purpose in the online language classroom by promoting interaction around language within a community (González-Lloret, 2020). Student communication with teachers and peers forges a connection to the learning community and course content (Lokey-Vega et al., 2018).

As Russell (2020) reported, anxiety about foreign language impedes communication and collaboration for online language students. Strategies for coping include relaxation exercises and peer support groups. Payne (2020) found that incorporating asynchronous written discussions followed by synchronous oral discussions in a web-conferencing environment helped language students situate their learning, thereby elevating the quality of communication output. Promoting collaborative tasks in online learning contributes to productive 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 class community (Borup et al., 2020; Garrison et al., 2010). A study on meaningful interactions in K–12 online language courses found that teacher–learner and learner–content interactions contributed to student perceptions of progress and satisfaction (Lin et al., 2017). Language students participate more meaningfully in synchronous instruction when tasks have been planned to account for cognitive difficulty. Another point is that scaffolding activities in course design builds confidence and establishes a routine (Payne, 2020; Russell, 2020). A predictable learning routine can particularly benefit young learners (Borup et al., 2020).

Appropriate online teaching methods support cognitive engagement (Tuiloma et al., 2022). According to Carrillo and Flores (2020), students' interaction in course activities influences teaching and cognitive presence. Cognitive presence seems to depend on opportunities for social presence and teacher guidance from content to critical reflection (Garrison et al., 2010). An important finding was that instructor-led synchronous discussions established cognitive presence more effectively than asynchronous discussions, which suggested an interdependence between teaching and cognitive presences (Molnar & Kearney, 2017). Using an adapted CoI survey, Miller et al. (2020) found that graduate students seem better suited for learning online. As speculated, undergraduates may not have the social community support for coping with the demands of virtual courses. Another way of seeing the CoI presences was proposed, whereby teaching presence acts as a foundation for learning and fosters social presence, which in turn generates opportunities for cognitive presence.

4 CONCLUSION & IMPLICATIONS

Although connections are made in the research regarding online learning for older and younger learners, literature on K–12 virtual education is under-explored. This problem has led researchers to call for more empirical study of K–12 practices that illuminates specific practices to use when working with youth. They also proposed moving beyond the question of whether online learning is equivalent to traditional learning to the conditions that produce effective online education. Further empirical research on how synchronous and asynchronous instruction facilitate the CoI presences was recommended. Hence, more work grounded in established theories for driving improvements in K–12 online education is warranted. The authors' SSVP framework may offer insight in this regard.

Finally, the synthesis of current research offered here is intended to serve leaders and teachers in their challenging work within online instructional contexts. More needs to be known about leading quality online instruction at the K–12 level, and how building community by facilitating the presences matter for student success. It is encouraging to know that the unique considerations of young people are the heart of pedagogical concerns in online worlds.

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