

## **Perceptions of Accessibility in Online Course Materials: A Survey of Teachers from Six Virtual Schools**

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Ensuring accessibility is an important concern for students with disabilities in online learning environments, including virtual schools. Previous research suggests that there is widespread confusion about what constitutes accessibility when designing instructional materials and who should be in charge of ensuring materials are accessible. Also, accessibility is often conflated with concepts like personalization, aesthetic appeal, and engagement. Accessibility is a critical issue as state educational agencies enable fully asynchronous classes with low levels of interaction between learners and teachers. As virtual schools come under corrective action failing to provide appropriate services to students with disabilities, learning about accessibility in those contexts is particularly vital. Moreover, states may begin to consider policies they made many years ago and determine their efficacy. In this study, 111 teachers from six virtual schools that were facing corrective action due to low graduation rates participated in a survey about their perceptions of the accessibility of the instructional materials for their online courses. The survey yielded a 42% response rate. Responding teachers perceived that their instructional materials were “somewhat” accessible with a wide dispersion of response data. Implications for these findings in light of previous research and in light of their corrective action status are offered. The study also stands as an example of a state reconsidering policies made before there was sufficient research to support a decision and the implications for critical data points like graduation rate.

**Keywords:** *K–12 online learning, virtual schools, accessible instructional materials, quality matters, students with disabilities*

## INTRODUCTION

The number of K–12 students in fully online learning programs had been increasing even before the COVID-19 pandemic brought online learning to the forefront of instructional delivery methods (Digital Learning Collaborative, 2019). Online learning has also been regarded to have the potential to offer more and more varied courses to students, particularly if courses are well designed (Lewis et al., 2015). Quality course content and the instructional materials that support it are also important elements of access (Edyburn, 2015; Rice, 2018). High-quality materials that all students can access should be a primary focus in inclusive educational environments (Nevarro et al., 2017; Powell & Walsh, 2019). As the COVID-19 pandemic continues, both traditional schools that are utilizing online technologies to continue to deliver instruction and virtual schools that were already using online and distance delivery must invest in accessible materials for students with disabilities because the Individuals with Disabilities in Education Act (2004) entitles these students to a free and appropriate public education (United States Department of Education, 2020). Outside of legal requirements, virtual schools could also be conscious of accessibility as a potential strategy for increasing the persistence and motivation of students (Franklin et al., 2015). When that is the case, then teachers and instructional designers have roles in ensuring accessibility.

Previous research has found limited efforts to prepare teachers of students with disabilities for online learning environments (Smith, et al., 2016). From interviewing practicing teachers from online programs in four states, Crouse et al., (2018) learned that teachers perceived themselves to be strong teachers of students with disabilities. These teachers were capable of articulating web-based tools that might be useful to their students, but they failed to describe specific strategies they used to support students with disabilities in individualized ways. Additionally, they were unable to articulate concrete ways to support students when they found that course materials that were inaccessible. Instead, they discussed what they had learned about the general affordances of fully online learning (e.g., self-pacing) and recruiting parents and other on-site mentors to monitor the children's engagement. Moreover, state education agencies (SEAs) and local education agencies (LEAs) have limited to no experience when it comes to conceptualizing and guiding access to course content per federal law (Burdette, Greer, & Woods, 2013; IDEA, 2004). Thus, it is likely that many teachers are coming to instruct in remote and online learning environments with little to no prior experience, education, or higher-level guidance about course materials and accessibility. To gather additional information from virtual schools about their perceptions of the accessibility of course instructional materials, we surveyed teachers from six virtual schools in a Midwestern

state using the accessibility items from the *Quality Matters* (QM) rubric (Shattuck, 2015). The specific research question was: How do virtual school teachers perceive the accessibility of the instructional materials for the courses they teach?

## REVIEW OF LITERATURE

Accessibility for online instructional materials has started to receive more attention from research. Researchers from the Center on Online Learning and Students with Disabilities conducted a number of research studies and information-gathering activities from 2012 to 2018 about fully online and blended learning environments for students with disabilities. These findings were summarized and shared in the *Equity Matters Report* (Basham, et., al., 2015; Center on Online Learning and Students with Disabilities, 2016). In these documents, researchers reported that access to the online environment and accessibility of the curriculum were important issues for online learning programs. Other researchers have also found that students with disabilities have been increasing their use of online and mobile environments but do not yet have universal access to online course content (Clifford, 2018; Xie, et al., 2018).

Besides teacher preparation, course designer knowledge and development have also been identified as important elements for achieving accessibility in online course materials (Crouse, et., al., 2018; Evmenova, 2018). Specifically, Rice (2018) explained that online course designers generally draw from three frames with overlapping ideas to make curriculum accessible: personalization, Universal Design for Learning (UDL; Rose, 2000), and adherence to Second 508 standards of the Rehabilitation Act of 1973 (§ 508, 29 U.S.C. § 794(d)). The emerging concept of personalized learning can mean that learners make choices about what, when, and how to learn and demonstrate learning based on self-determined goals (Graham et al., 2019). It can also mean that digital applications select items to be learned based on past performance on specific tasks. In the first case, the curriculum might be more accessible if learners are able to successfully personalize it according to preferences and their own sense of their needs and abilities. In the second case, the learning might be more accessible because it is targeted to a gap in knowledge (Drexler, 2018; Worthen, 2016).

The second concept widely used for conceptualizing accessibility comes from the Universal Design for Learning (UDL) (Rose, 2000). When approaching instruction from a UDL perspective, materials are presented in different modes (e.g., listening and reading text) and learners choose whether to use one, the other, or both. The UDL framework also stipulates that learners should have multiple means for expressing their learning through visual, written, oral, or other modes.

Finally, instructional materials designed for accessibility must meet federal mandates and adhere to the requirements of amendments to Section 508 of the Rehabilitation Act of 1973 (§ 508, 29 U.S.C. § 794(d)). Key features of accessibility that cut across these three orientations include the following, summarized by Rice (2018): (a) Organization of content around objectives, goals, aims, and/or themes, (b) presentation of content in multiple formats; (c) strategic, incremental content presentation; (d) user choices about when and how to engage with content; (e) hypermedia support features for comprehension of a text, image, and sound (f) information for users regarding upcoming content or points of difficulty; (g) user choices for products that demonstrate mastery; (h) opportunities for collaboration with instructors and peers; and (i) assistive technologies.

While designers in Rice's (2018) study could articulate all three of these frames very well (personalization, UDL, Section 508), they struggled to conceptualize the needs of users who had disabilities. Therefore, their accessibility design skills were limited to a focus on writing very specific learning objectives, adding videos, and leaning on quality assurance rubrics and tools to provide feedback as to whether course materials were accessible. Notably, the designers did not display a clear understanding of accessibility alongside concepts such as engagement (in various forms) or even the course's overall aesthetic appeal.

In virtual schools, the work of planning instruction in terms of what should be learned happens when instructional designers design the instructional sequence for everyone in the same course until an update is recommended. The reality is that teachers have historically been unable to provide input in the course design in virtual schools (Crippen & Archambault, 2009; Crouse, Rice, & Mellard, 2018). Instead, they help the students do the instructional tasks designed by others and presented in the course materials. The separate responsibilities of instructional planning and instructional implementation occludes who is responsible for ensuring accessibility in K–12 online courses (Rice, 2018).

For example, course designers have reported that they felt their work was to design a template of curriculum materials for a general population of students, but that teachers, parents, and on-site mentors carried the responsibility for ensuring accessibility (Rice, East, & Mellard, 2015; McAlvage & Rice, 2018). Alternatively, virtual school teachers have reported that they rely on the course curriculum materials from designers to be accessible at the outset. Thus, they may not be attentive to rapid increases and decreases in text complexity inherent in online coursework and may not understand why a learner was moving through the materials without difficulty, but suddenly struggles to comprehend (Greer, et., al., 2014; Rice & Greer, 2014; Rice, 2017). Virtual educators, including teachers, may even attribute the

difficulty a learner is experiencing across different modules to other issues such as motivation or self-regulation, without specific evidence that is the case (Rice & Carter, 2015).

As a compensation strategy for the inaccessibility of the course instructional materials, teachers may pressure parents to read the materials, explain them to the student, find additional resources, and generally keep the children on task (Clifford, 2018; Rice & Carter, 2016; Rice, et., al., 2019; Sorensen, 2019; Stahl, et., al., 2017). Eventually, virtual teachers and administrators may cease to advocate for the environment to be changed to meet the needs of the learner and come to believe that online learning is not a good fit for the student. When they act on this belief, they may counsel the student out of online learning altogether (Carter & Rice, 2016; Rice & Carter, 2015). Taken together, the preponderance of available evidence from previous research suggests that *no group* has a specific responsibility to see that course materials are accessible in any frame (personalization, UDL, or Section 508) and that parents of students with disabilities are often left to compensate the best they can.

One specific example of an area of concern about materials accessibility is vocabulary support. Teaching vocabulary in the course materials is important for ensuring that learners can comprehend texts and engage with ideas (Kuder, 2017). If learners cannot comprehend the text, it is more difficult for them to do the tasks associated with demonstrating understanding of the content (McKissick et al., 2018). Further, when vocabulary support is present, more importance has been misplaced on specialized content words (e.g., *schist*, *gneiss*, and *rhyolite* in geology). Instead, vocabulary researchers have found that general academic high-frequency words (e.g., *summary*, *description*, and *rationale*) are more important to teach children than content words to ensure academic success (Beck, et al., 2013).

Three studies of vocabulary instruction and support in K–12 online learning course materials conducted by independent groups have had similar findings: (1) students are required to learn too many of the wrong kind of words (specialized content versus general academic high-frequency words); (2) students with disabilities are not receiving adequate vocabulary support; and (3) the interventions and support that are in place so far are not working—they are contributing to the inaccessibility of courses for learners (Mize et al., 2018; Rice & Deshler, 2018; Stetter, 2018).

Moving forward, the challenge is ensuring that everyone who has responsibility for instructional materials, such as course designers, parents, and teachers, can recognize accessibility concerns in instructional materials and can advocate for accessibility either through new materials or through support for engaging with existing materials. What parents and on-site

menotrs should not have to do is compensate on their own without support from the school, specifically the child's Individualized Education Program (IEP) team. This team meets as part of IDEA (2004) to make goals and agree on accommodations and modifications to instruction. In short, online course materials are unlikely to meet accessibility guidelines unless there is sufficient awareness about accessibility and then targeted efforts to make them so. Targeted efforts should protect against unchecked growth in on-line learning providers with little or no oversight (Barbour, 2017). Ensuring quality courses may be supported with frameworks from professional organizations, such as *Quality Matters*.

### BACKGROUND ON THE QUALITY MATTERS STANDARDS

From 2003–2006, the U.S. Department of Education Fund for the Improvement of Postsecondary Education funded a group of Maryland distance educators. Their charge was to develop a “replicable and scalable program, informed by research, to assure the quality of online course design. The immediate result was the *Quality Matters Rubric*<sup>TM</sup> and peer-based course review process” (Shattuck, 2015, p. 155).

After the grant, a non-profit program was established to continue the work of updating the standards, providing training and professional development, and monitoring the course review process. The organization was self-supported through subscriptions and other fee-for-services offerings. The mission of *QM* currently includes improving the quality of online education and student learning through validated tools and a quality-assurance process; providing faculty development, resources, and opportunities for building a community; and fostering the integration of *QM* standards and processes in organizational settings focused on improving the quality of online education (Shattuck, 2015).

It should also be noted that the standards that are available online are not the complete rubric, which is only available to subscribers and course reviewers. Also, *QM* has more than one rubric. These include The Higher Education Rubric<sup>TM</sup>, The K–12 Secondary Rubric<sup>TM</sup>, The K–12 Publisher Rubric<sup>TM</sup>, The Higher Education Publisher Rubric<sup>TM</sup>, and The Continuing and Professional Education Rubric<sup>TM</sup>. The Higher Education Rubric, originally developed during the grant, is now in the fifth edition (Shattuck, 2015). For this study, researchers derived survey items from the K–12 *QM* Standards for online instructors. Items were centered around the general standard category named accessibility and usability. The researchers derived five survey items based on accessibility and usability standards. Survey items were as follows; (1) Course navigation is logical, consistent, efficient, and intuitive; (2) The course design facilitates readability for students;

(3) The course provides accessible text and images in files, documents, LMS pages, and web pages to meet the needs of diverse learners; (4) The course provides alternative means of access to multimedia content in formats that meet the needs of diverse learners; and (5) Vendor accessibility statements are provided for all technologies required in the course. efficient, and intuitive. Researchers used the Accessibility Standards items that were publicly available from the K–12 rubric. The state in this study had been using the rubric as part of their evaluation processes in the wake of corrective action and they wanted to use the items for consistency with their other efforts.

## METHODS

Teachers from six virtual schools in a Midwestern state were asked to report on their course tools, technologies, and design. This Midwestern state had three distinct characteristics related to online learning. First, the state had launched a statewide initiative to support personalized digital education across K–12 settings. Second, the enabling statute that authorized the operation of virtual schools did not specifically require synchronous instruction hosted by a teacher. There were no regulations associated with the statute to prohibit virtual schools from using teacher-less asynchronous lessons as the sole source of instruction. As a consequence, several of these schools were operating with no synchronous instruction with a teacher at all or where it was extremely infrequent (e.g., less than once per month). Third, this state reached out to researchers due to growing concern for subgroup populations related to access and equity. This was important because all six schools except one had a graduation rate of below 67% in four sub group categories and one school's graduation rate was below 67% for students with free and reduced lunch. Because of this, all six schools were subject to corrective action from the state department of education.

### Personalization Initiative

This state's interest in access and equity came alongside planning for a statewide initiative that challenges its districts to rethink how all schools including virtual schools define successful outcomes for students graduating with a high school diploma. Part of the plan that districts must submit was supposed to describe how students will be engaged in personalized learning according to learner preferences and external support steps towards post-secondary goals (administratively or algorithmically determined). When the current study was planned, the state officials working with researchers believed that personalized learning activities would most likely have an

educational technology component and they co-designed the study with researchers with this in mind.

While sometimes personalized learning is conflated with individualized learning in an IEP, Worthen (2016) articulated the difference.

A personalized learning plan is not the same thing as an Individualized Education Program, which is required by the Individuals with Disabilities Education Act. IEPs are written statements for each child with a disability that must include information on the student's academic progress, address how the child will be integrated into and supported in the general classroom, and describe any special instructional needs, services, or accommodations. Although personalized learning plans and IEPs share a focus on the needs of each child, the IEP is designed to ensure that a student who is eligible for special education services receives them and that accommodations and supports level the playing field with their peers and allow them to participate in the general education classroom. (p. 44)

In light of these nuanced differences, the state leaders were interested in gathering preliminary information that would help them tackle this complex issue of providing learning that is individualized (using the standards and guidelines of IDEA) as well as personalized through mastery goals and learner preferences.

### **Enabling Statute**

The statute in this Midwestern state enabled virtual schools or programs that were not planning to offer any asynchronous instruction with a certified teacher. Of the six schools in this study, only two of the schools were currently providing any synchronous instruction from teachers to students. Neither school required students to participate in synchronous instruction or discussion. This was unfortunate since previous research suggests that many students with disabilities prefer synchronous discussions because they are perceived to support persistence and feelings of belonging (Dahlstrom-Hakki, et., al., 2020). State leaders wanted researchers to help gather teacher perspectives related to the availability of course tools, technologies, and design.

There was also concern that the enabling statute from 15 years ago defining a virtual school or program as having an instruction that occurred asynchronously and did not require synchronous instruction meant that instructional materials needed to be more accessible for students at the outset since teachers would have fewer opportunities to compensate with synchronous instruction, such as one-on-one opportunities or small group lessons. State



leaders realized there needed to be more exploration of what teacher-less or teacher-low instruction looked like.

### **Access and Equity Focus**

The state where this research took place had just received a post-audit report on virtual schools and programs as part of the corrective action. The report highlighted increasing concerns from offices across the state education department regarding the actual operations of the virtual programs across the state. Specifically, the report expressed concerns about access to special education and programs for students who are eligible for free and reduced lunch, as well as students who are culturally and linguistically diverse. The report suggested course materials as a potential site for gauging equitable access since course materials should be relatively easy to exchange, revise, edit, break apart, add-on features or multimodal elements, and/or supplementary support, although previous research calls this into question (Crippen & Archambault, 2009; Crouse, et., al., 2018). Course materials were also identified out of an ideological stance held by the state leaders that it is not learners with disabilities that must change to accommodate online educational environments, but rather the environments or elements of these are disabling, and therefore the environments should change (Simui et al., 2018).

### **Instrument Development**

State leaders and researchers designed and distributed the survey to gather preliminary information about perceptions of accessibility as a starting point and to learn more about what items and what wording might provide needed information. The data for this study was self-reported via an online survey. Below, additional information about participants and data collection processes are provided. The *QM* rubric was used to generate items for the survey. The items were developed using a 7-point Likert-like scale that ranged from "strongly agree" to "strongly disagree." This framing based on the level of agreement enabled the researchers to use the words from the rubric verbatim. Standard eight from *QM* refers to specific knowledge and skills related to usability and accessibility. Specifically, the standard said that "The course design reflects a commitment to accessibility and usability for all learners" (Quality Matters, 2019). Content validity procedures were enacted using 5 trained *QM* reviewers and 5 state-level stakeholders to rate the items on a scale of 1-3 in terms of their fidelity in reflecting the *QM* standards (Malmgreen et al., 2009). The mean rating per item was 2.9.

## Participants and Data Collection

The survey was sent to administrators at six virtual schools in the state. The administrators were asked to send the survey to both full and part-time certified teaching staff. These teachers were assigned to every subject, including special education. The smallest number of teachers in a school that responded to the survey was two. The largest number of respondents from a single school was 20. Across all six schools, the responding teachers had an average of five years of experience teaching, but the range of their experience was seven months to 10 years. All survey respondents' personal identifying information was kept anonymous to increase response rates and decrease bias in responding. The survey was released in May of 2020 and closed in June of 2020. Forty-seven teachers completed at least part of the survey out of a possible 111 number of teachers across the six schools resulting in a 42% response rate.

## FINDINGS

Table 1 summarizes the teachers' responses to the survey regarding accessibility. Below is additional information about the results. Table 1 reports the results by survey item.

### Item#1: Course Navigation Characteristics

Although most learning management systems (LMS) have a standardized approach with established navigational features, teachers need to think about user operability. User operability ensures that students can control and manipulate all aspects of the LMS to access and respond to course content. Teachers were asked to report on how much they thought that the platform used to teach online courses provided logical, consistent, efficient, and intuitive navigation options. Of the 47 respondents, 70.1% agreed or strongly agreed that navigation is user-friendly. The remaining 17% somewhat agreed and 10.6% were neutral and 2.1 percent of respondents strongly disagreed. These data yielded a mean of 5.72, which indicated a "somewhat" level of agreement and a standard deviation of 1.14, which suggests dispersed responses.

### Item #2: Course Readability

Readability is about whether the materials are visually legible as well as at the right level of text complexity for learners. Around 72.3% of responding teachers agreed or strongly agreed that online courses facilitated readability. Fourteen point eight percent somewhat agreed, 8.5% were neutral and 4.2% disagreed in some form. Data related to teacher perception of

**Table 1**  
**Results by Survey Item**

| Statement   | M    | SD   | 7<br>Strongly<br>Agree % | 6<br>Agree % | 5<br>Somewhat<br>Agree % | 4<br>Neither<br>Agree nor<br>Disagree % | 3<br>Disagree % | 2<br>Somewhat<br>Disagree % | 1<br>Strongly<br>Disagree % |
|---|------|------|--------------------------|--------------|--------------------------|---|-----------------|-----------------------------|-----------------------------|
| Course navigation is logical, consistent, efficient, and intuitive.   | 5.72 | 1.14 | 21.2%                    | 48.9%        | 17%                      | 10.6%                                   | 0               | 0                           | 2.1%                        |
| The course design facilitates readability for students.   | 5.78 | 1.12 | 25.5%                    | 46.8%        | 14.8%                    | 8.5%                                    | 2.1%            | 2.1%                        | 0                           |
| The course provides accessible text and images in files, documents, LMS pages, and web pages to meet the needs of diverse learners. | 5.8  | 1.06 | 29.9%                    | 36.2%        | 21.3%                    | 10.6%                                   | 2.1%            | 0                           | 0                           |
| The course provides alternative means of access to multimedia content in formats that meet the needs of diverse learners.           | 5.2  | 1.68 | 25.5%                    | 27.7%        | 19.1%                    | 12.8%                                   | 2.1%            | 10.6%                       | 2.1%                        |
| Vendor accessibility statements are provided for all technologies required in the course.   | 5.21 | 1.35 | 21.7%                    | 26.1%        | 13%                      | 32.6%                                   | 4.3%            | 2.1%                        | 0                           |

online course readability revealed that the average response was 5.78 which indicates a strong agreement. However, the standard deviation of these data are 1.12, which indicates a wide dispersion.

### **Item #3: Accessible Text and Images**

Teachers were asked if they thought the courses they teach provide accessible text and images in files, documents, LMS pages, and web pages to meet the needs of diverse learners. This is not a question about whether learners can cognitively process the information—it is only concerned about whether the students can open the documents and access the information in a meaningful way. Of 47 teachers who responded, 66.1% agreed or strongly agreed that text and images within their courses or assignments were accessible. Zero respondents strongly disagreed, but over 31.9% reported neutral or somewhat agreed and 2% disagreed. The average response to this item was 5.8 showing high agreement with teachers. The standard deviation is 1.06 slightly closer concentration of data than the first two items but still widely distributed overall.

### **Item #4: Alternative Means of Access to Multimedia Content**

When instructional materials require certain scripts (e.g., Java) or programs (e.g., Adobe Flash), alternative means for opening the documents must be provided. Teachers were asked whether they agreed that the online courses provide alternative means of access to multimedia content in formats that meet the needs of diverse learners. Overall, 53.2% of teachers agreed that alternative means of access are available while 19.1% only somewhat agreed. Also, 27.6% neither agree nor disagree or completely disagreed. The average response was 5.2, the lowest of all of the items, showing agreement was leaning towards somewhat agreement or a lack of surety about this topic. The standard deviation between responses is 1.68 showing the most widely dispersed responses of all of the items.

### **Item #5: Vendor Accessibility Statements**

Vendor accessibility statements provide information about what the creators of instructional information have done to ensure accessibility. Examples of this may include adding ALT-Text to images or using code that facilitates screen reading programs. Vendor accessibility statements are important because they provide information to school districts that the digital learning product was designed with diverse learning needs in mind. School districts have a legal obligation to ensure that all digital resources are fully accessible. This obligation is supported by *A Dear Colleague* letter issued by the US Department of Education's Office of Civil Rights (OCR) reiterated that all students including those with disabilities must be afforded

the same educational opportunities originally intended for educational technology used across the district (Swenson & Ryder, 2016). Teachers were asked whether they had an awareness of whether accessibility statements were being provided for all technologies required to teach their online courses. Forty-seven point eight percent of the teachers reported they agreed or strongly agreed statements were in place. However, 52% of the teachers said that they either somewhat agreed or did not agree to some degree. The average response on this item is 5.21 and a standard deviation of 1.35, indicating moderate agreement with the item, but widely dispersed responses.

### LIMITATIONS

There are several important limitations to this study. First, this survey was only given to teachers in one state (although it was given to virtual teachers at multiple schools). Concerns about the items and the motives for asking may have introduced bias (Fosnacht et al., 2017). For example, some teachers may have been worried that agreeing that the instructional materials were inaccessible would have implications for perceptions of them or consequences for their future employment status, regardless of assurances from researchers that identifying information would not be collected. On the other hand, while administrators in the schools were aware of the enabling statute and the recent interest in it, teachers had varying levels of awareness, meaning that some may have discerned that their responses could have implications for their job responsibilities and even security and some did not.

Further, although the researchers used the *QM* rubric because it was widely used in training and provided some clarity in language, it is also possible that the rubric's elements with reference to accessibility were simply not nuanced enough for teachers to comprehend the language on the rubric and then evaluate their instructional materials. Also, previous research has found that K–12 virtual teachers have very little input into curriculum and course materials (Archambault & Crippen, 2009; Crouse, et., al., 2018). Therefore, they might not have had sufficient preparation for performing this type of evaluation, even though the state had been working to incorporate *QM* elements into the language of practice. Finally, some teachers may have simply trusted that the course designers had made the materials accessible because after all, they were being provided these materials and told to use them with students.

### DISCUSSION

As more educational technologies become available for instruction, new challenges are presented with regard to access. Federal laws have made it clear that accessibility is not an option, but a mandate that could have

negative consequences for schools if not adhered to (United States Department of Education, 2020). Educational institutions, including K–12 virtual schools, need to review their technologies regularly and make plans to ensure they are in compliance with federal standards. When institutions fail to provide teachers with adequate tools, course designers and teachers might resort to providing minimal support or they may over-rely on parents to compensate when learners become frustrated (Carter, et al., 2020; Clifford, 2018; Rice, et al., 2019; Sorensen, 2019). The result is that no group of individuals seems to be prepared to take responsibility for accessibility and therefore, negative outcomes for students with disabilities seem all but inevitable. In the case of the virtual schools in this study, students with disabilities and other vulnerable groups were graduating at levels below their peers.

The findings of this survey indicated that most teachers who responded perceived that the instructional materials provided by the school were accessible to students but only at the “somewhat” level of agreement.

### **RECOMMENDATIONS FOR PRACTICE**

The findings of this study may also mean that this state is well on its way to having accessible curriculum and course materials to support their renewed enabling efforts to advance online learning that is fully asynchronous and which does not require a teacher to support to access the curriculum. If this is the case, then these schools and schools that gather similarly positive data should pilot these efforts carefully to track student persistence and achievement in the teacher-less asynchronous courses. Special care should be taken to ensure that students with disabilities are able to complete the assignments and persist through the course and are still provided services under IDEA (2004). Care should be taken to ensure that children with disabilities have many opportunities to interact with peers with and without disabilities as this is critical to educating children in the least restrictive environment. Schools should make regular contact with all parents, but especially parents of students with disabilities to consult as to how much time is spent doing the lessons and whether the materials are accessible for individual learners (Clifford, 2018; Sorensen, 2019).

As schools continue to use prepackaged digital instructional materials, teachers will need to find ways to identify the access points for academic content provided through different media. These access points include logging on, finding where to access content, locating a place to respond, entering a response, and submitting the response. Informal checks to ensure students can open and use academic content will be critical at the beginning of courses and throughout the academic school year. Virtual schools should review materials for text complexity (Greer et al., 2014). Attention to the

accessibility includes features such as heading order and styles, alternative text for images, consistent and readable font, and contrast between text and or images and the background as per Section 508.

Further, it is likely that there will be a rapid integration of multimedia in many of these completely asynchronous courses to compensate for the lack of teacher-led instruction and videos are not inherently engaging or accessible. Increased understanding of how to ensure multimedia is accessible for all learners is critical. This may include audio or video that is synchronized with another format for presenting the information. It could also be media alternatives for text such as audio-only, video-only (including sign-language video), or audio-video. Finally, as schools adopt digital learning materials as part of the procurement process the material review process should include a study of the accessibility statement. This statement should be reviewed according to the anticipated needs of teachers and their students unique to the demographics of the district.

Given findings from previous research, teachers in this state have not been involved in the purchasing processes for digital instructional materials. Teachers should understand how the products they are working with are aligned with access requirements set by state and local agencies. A checks and balances system designed to include teachers in the procurement process could increase the likelihood of the adoption of accessible digital materials if teachers are provided professional learning about accessibility from personalization, UDL, and Section 508 perspectives. Ongoing learning related to product accessibility seems to be vital for ensuring that all students have equal access to educational opportunities (Rice, 2017).

Finally, even if students have access to a curriculum via instructional materials that they can move through with support from the course itself and perhaps some minimal monitoring from a mentor (such as a parent), there are additional considerations for students being served under IDEA (2004). These include related services, such as therapies, and other types of assistive technology and support. Also, students with disabilities are entitled to social and emotional support and assistance with self-regulatory behaviors like goal-setting. While these services might not be part of the course materials, they should be provided to help the learners benefit from the educational experience of using the course materials. Supplementary services are still required to be provided by schools and parents should be informed of their rights to these services per IDEA (2004), regardless of delivery strategy and modality. Such considerations will be important as the COVID-19 pandemic and its aftermath ensue and have potentially long-lasting implications on instructional delivery for all students.

## RECOMMENDATIONS FOR RESEARCH

Previous interview research has found that teachers perceive that learning to teach students with disabilities online carries a steep learning curve, but that they eventually do learn to use a variety of tools (Crouse, et., al., 2018). Future research using surveys, interviews, or other means should concentrate on learning what virtual teachers know about accessibility in relation to the online curriculum as it is delivered with varying amounts of teacher-learner interaction. Further, the connections (and disconnections) between personalization, individualization, and accessibility need further theoretical and empirical investigation. Additional investigations might also consider conceptions of accessibility as they relate to but differ from definitions of engagement held by scholars and practitioners.

Course design is another area about which we know little in terms of understanding accessibility. More research about how these designers come to understand accessibility from various perspectives, such as Universal Design for Learning (Rose, 2000), Section 508 requirements or other federal guidelines, and even the *QM* materials. This is critical since the course designers often are specifically tasked with ensuring the course is aligned with the *QM* rubric.

Finally, more expansive frameworks are needed to consider shared responsibility for issues like accessibility. One such framework with potential is the Academic Community of Engagement framework that stresses the interconnectedness of home, community, and school (Borup et al., 2020). Such a framework might be theoretically or empirically explored in greater detail to extend beyond the notion of engagement and attend to far-reaching challenges like accessibility.

## RECOMMENDATIONS FOR POLICY

The findings from this study shed light on the clear need to understand accessibility and how it is conceptualized by policymakers as well as educators. Specifically, findings indicate that it may be necessary to take a fresh look at what state policies are necessary to ensure virtual schools use a systemic wide approach to ensure all students can access learning opportunities offered in virtual learning environments. Further, focusing on accessible curriculum should take on new importance as states identify alternative instructional models that include the use of digital materials to support social distancing due to the COVID-19 pandemic. Many virtual education requirements in the state in this study were established almost 15 years ago when little research was available about the effectiveness of asynchronous learning with K–12 students or how to operationalize federal mandates related to equal access to educational technology. Many policy-making bodies might rush to make policies and not consider all the implications. In this state,



a policy was made years ago, and only recently were the leaders considering what that meant for students with various needs, such as the desire of many students with learning challenges to have access to synchronous discussions (Dahlstrom-Hakki, et., al., 2020). Careful future planning should ensure that policies undergo periodic review to ensure that they are aligned with emergent research on promising practices.

Policymakers may need to consider updating virtual learning requirements in a way that reflects what we now know about equal access for all learners. For example, only two of the six schools represented in this study offered students opportunities to learn alongside teachers and peers in real-time. Further, almost all the teachers in the study agreed that there were students on their caseload that they have never had any interactions with during the academic year. Finally, emerging data show that when students lack access parents are not equipped with how to identify what supports are necessary to gain access to instruction and digital content (Rice et al., 2019). These gaps are partially attributable to the lack of policies and procedures related to teacher and student interactions, participation and attendance, and a general misunderstanding of how students learn best in virtual learning environments.

Despite the current need to pivot quickly to virtual or remote learning, policymakers must not assume that student access to a device can be directly equated with student learning outcomes. Without a policy that aligns with accessibility guidelines set by federal law, it is likely many of our students will be denied equal opportunity to access the general education classroom. Further, states and other entities must plan to meet IDEA and other federal guidelines for students with disabilities and for other historically underserved populations regardless of the instructional model. The reason IDEA (2004) exists is because school systems and communities did not deign to include students with disabilities on their own—there had to be a mandate (Yell, Rogers, & Rogers, 1998). There is no reason to believe that without sound policy guidance at all levels, educators interested in expanding online learning will consider and attend to students with disabilities on their own.

## CONCLUSION

Students with disabilities are a growing population in online learning, but they are underserved (Basham et al, 2016; Center on Online Learning and Students with Disabilities, 2016; Xie, et al., 2018). Targeted, specific support grounded in meeting the demands of the IDEA (2004) is an important course of action. In this study, researchers used five items from the QM Standard 8 and determined that virtual school teachers in one state agreed that their curriculum was somewhat accessible. Even so, more efforts are needed to ensure that accessibility supports are available in virtual schools, especially as new laws and policies are put in place limiting students' regular, synchronous access to teachers.

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