

Learning to Serve Students with Disabilities Online: Teachers' Perspectives

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As K-12 online learning continues to grow for all student populations, so should knowledge of best practices related to teaching students with diverse learning needs, including students with disabilities. The absence of a strong literature base provides a unique opportunity to explore teacher knowledge in these settings, particularly as they consider their role in the call for highly skilled, high-quality instruction for all students, regardless of disability status. This study explored descriptions of practice from fully-online teachers in their instruction of students with disabilities. Data were collected using semi-structured interviews of online teachers across a variety of grade levels. Analysis involved both thematic and theoretical elements to identify concepts for interpretation. Findings were divided into two major concepts: 1) online teachers' learned practices about working with students with disabilities, and 2) online teachers' sources of knowledge about "good" teaching practices when working with students with disabilities.

Keywords: Online learning, students with disabilities, teacher preparation, virtual charter schools, teacher knowledge about disability

In 2015, an estimated 275,000 children were enrolled in virtual charter schools in grades K-12, taking 3.3 million courses (Watson, Pape, Gemin, & Vashaw, 2015). While Molnar and his colleagues (Molnar, Huerta, Shafer, Barbour, Miron, & Gulosino, 2015) suggested that at least one in 10 online learners has a disability, this population is largely untracked (Rice & Ortiz, 2016). The lack of information about students with disabilities presents challenges for teaching practice, preservice preparation, and professional development (Rice, 2017a).

Teaching practices can result from formal training based on what research has demonstrated to be effective (Biesta, 2015). However, practices can also result from teacher judgment developed through experience over time (Fenstermacher & Richardson, 2005). While online teachers are expected to provide high-quality instruction to all students, there are additional federally-mandated responsibilities through the Individuals with Disabilities Education Act (IDEA, 2004) that affect teacher work. Little is known about how teachers leverage professional knowledge as they move from traditional to online classrooms (Barbour, 2012; Rice, 2006; Rice & Ortiz, 2016).

The purpose of this study was to identify teachers working in fully-online settings at a variety of grade levels who instruct students with disabilities and learn what these teachers could articulate about teaching students with disabilities. We also wanted to learn where they believed they acquired this knowledge. Stated as research questions, we wanted to know:

1. What do online teachers know about working with students with disabilities in a virtual school setting?
2. What do these teachers credit for their acquired knowledge?

PREPARATION FOR ONLINE TEACHING OF STUDENTS WITH DISABILITIES

Research in online teacher preparation in general is limited (Archambault & Kennedy, 2014; Rice & Dawley, 2007). Although the role of teachers in online instruction differs significantly from traditional instructional settings, recommendations from research conducted in these face-to-face settings is often used to inform online education standards. Currently, few teacher preparation programs make any attempt to address online learning as a separate and distinct context (Kennedy & Archambault, 2016). The reluctance to consider online learning may be explained through Kennedy and Archambault's (2012) survey of teacher education programs across the U.S. They found that respondents from these programs did not consider online

learning a legitimate form of education. Preparation programs also were unsure what a fully-online education looked like from a practitioner perspective.

One of the biggest obstacles faced by teacher education programs is the general lack of available models on which to design courses and experiences that will support prospective and practicing teachers designing, delivering, and supporting students through virtual school experiences (Barbour, 2012; Barbour, 2016). Research related to online teacher preparation and professional development best practices remains scarce, with current studies often being program-specific or anecdotal in nature (DiPietro, Ferdig, Black, & Preston, 2008; Ferdig, Cavanaugh, DiPietro, Black, & Dawson, 2009; Zweig, Stafford, Clements, & Pazzaglia, 2015). Even in rare instances when teacher preparation programs offer prospective teachers the opportunity to gain field experience in online teaching prior to graduation, these programs typically still require prospective educators to also have face-to-face fieldwork experiences, ostensibly to ensure they are prepared for “real” teaching (Archambault & Kennedy, 2014).

LEARNING TO TEACH STUDENTS WITH DISABILITIES ONLINE

Teacher preparation that is specific to online learning *and* specific to students with disabilities is even more scarce. Hallmark practices in special education teacher preparation in traditional settings include strategies for direct instruction, behavior management, and social skills that will lead to increased inclusion for students with disabilities (Brownell, Ross, Colon, & McCallum, 2005). However, there is not research about whether these strategies are applicable online and if so, what they might look like (Rice, East, & Mellard, 2015). Further, it is unclear whether these strategies could be used, since online teachers report having little to no control over content and learning experiences (Archambault & Crippen, 2009; Borup & Stevens, 2016). The research that does exist suggests the following major skills that high quality online teachers should have when working with students with disabilities (Rice, Pace, & Mellard, 2016):

- *Monitor student progress* through the online course and intervene as early as possible when problems arise (Rice & Carter, 2015).
- *Provide instructional strategies* and other specific support to students with disabilities that includes, but moves beyond, Individualized Educational Programs (IEPs) when appropriate (Collins, Green, Nelson, & Madahar, 2015; Marteney & Bernadowski, 2016).

- *Assist students in learning important vocabulary and meeting other textual demands* (Rice, 2017b; Rice & Deshler, 2018).
- *Extend opportunities for learner-learner engagement and general social skill development* via the internet (Borup, 2016; Marteney & Bernadowski, 2016).
- *Advocate with vendors and support in-house course designers* in making curriculum appropriate for students with various exceptionalities (Smith, 2016; Rice, 2018).

While the research base is small, some special education teacher educators report an interest in incorporating online experiences into teacher preparation. For example, Smith, Basham, Rice, and Carter (2016) surveyed special education teacher educators and found that most teacher educators were trying to provide experiences building curriculum with advanced Internet technologies. These teachers also discussed the importance of building relationships with students and collaborating with parents online. Even so, the teacher educators did not report including online lesson delivery, online instructional strategies, or assessment. They further reported that they did not discuss legal aspects of online service delivery with prospective teachers.

Rice, Mellard, and Carter (2016) found similar patterns during focus groups with special education teacher educators. Teacher educators were interested in promoting online education but hampered in incorporating online assessment and instruction. The teacher educators cited a lack of models and difficulties orchestrating online teacher preparation *for* online teachers across departments, colleges, and with local schools. Finally, Rice (2017a) studied online teacher professional development opportunities that related to students with disabilities in fully online schools across the United States and found that there was little formal professional development pertaining to instructing students with disabilities.

In summary, the lack of teacher preparation and subsequent professional development support for online learning undercuts the intentions of IDEA (2004) which directs schools to provide K-12 students with disabilities with a Free and Appropriate Public Education in the Least Restrictive Environment possible. More direct research with online teachers was necessary to better understand what K-12 teachers working with students with disabilities have learned about working with this population and how they learned it. The findings provide some insight into whether and to what degree practices advocated by previous research are reflected in online teachers' discussions about their practices.

METHODS AND STRATEGIES FOR LEARNING FROM ONLINE TEACHERS

The primary data source was interviews conducted with participating online teachers (Kvale, 1996). In interacting with these teachers, we adopted Kvale's notion that "[t]he interview is the stage upon which knowledge is constructed through interaction of the interview and interviewee roles." (p. 127). Teachers were invited to participate based on administrative referrals from three large virtual charter school programs operating across the United States. Of the 20 referrals we received, six teachers agreed to participate. Table 1 provides descriptive information about the participating teachers. All teachers in the study had degrees in their subject area and teaching certification. Cheyenne also had special education preparation as an add-on endorsement. The students in their schools with disabilities represented a variety of exceptionalities that were both high and low incidence. The most common types of disabilities were autism spectrum disorders, emotional/behavioral disorders, specific learning disabilities, and other health impairments (particularly attention and hyperactivity disorders).

Table 1
Demographic Information for Participating Teachers

Pseudonym	Grade(s)	State	Subject	Years teaching online	Total years teaching
Nathan	9-12	Ohio	Math	2	2.5
Cheyenne	1, 4	Kansas	Gen Ed.	5	10
Hannah	K-1	Nevada	Gen Ed.	7	8
Alec	6	Ohio	Math	5	7
Kristen	9	Minnesota	English	8	15
Erin	6-12	Kansas	Math	8	12

Instrument Development

To interview teachers, we used a schedule. In developing the schedule, we operated from van Manen's (1990) suggestion that the number of questions on a schedule was less important than whether they were tailored to the research question at hand. These questions were divided topically and appear in Table 2. The protocol included questions related to professional development, views of the field of online education, content delivery and

student engagement, and family support. Questions regarding modifications and accommodations available to students with disabilities in online environments were also addressed.

Table 2
Online Practicing Teachers Interview Protocol

Topic	Sample Questions
Teaching experience	<p>What is your total years of experience teaching online? What content domain do you teach?</p> <p>Did you teach in a traditional face-to-face classroom prior to your current assignment? Can you elaborate on these experiences?</p>
Preparation to teach students with disabilities online	<p>What, if any, prospective professional development or training experiences prepared you for working in an online environment?</p> <p>What could teacher preparation programs do to better prepare prospective educators to teach in an online environment?</p>
Teaching practices for students with disabilities	<p>How do you plan and design the curriculum for the content that you teach online? Do you have flexibility to adapt the curriculum to meet the needs of students with disabilities?</p> <p>What, if any, standards do you use to help you make instructional decisions?</p> <p>What methods do you use to engage your students in course content online? How do you maintain a professional connection or presence with your students through an online environment?</p> <p>What kinds of educational accommodations or modifications have you made for students with disabilities in an online course?</p> <p>If you could change one thing to more effectively meet the needs of students with disabilities in an online or blended environment, what would that be?</p> <p>What else do you think is important to know about improving the participation and success of students with disabilities in online courses?</p>
Professional development for teaching students with disabilities online	<p>What types of professional development opportunities do you participate in?</p>
Relationships with families and colleagues	<p>How have you involved parents and other family members in the online learning curriculum?</p> <p>What advice would you give to other online teachers that are new to the experience?</p> <p>What are your perceptions about how other educators view online instruction?</p>
Perceptions of the trends in online special education service delivery	<p>What are the biggest changes you see happening within the field of online and blended education?</p>

Interviews were conducted between June and September 2016. Interviews were audio recorded and transcribed. Identifying information was coded during the transcribing process, and copies of completed transcriptions were sent to the teachers for review and to enlist their assistance in eliminating any additional identifying information that remained.

In addition to the interview protocol, a 12-question online survey was developed using Qualtrics, an online survey tool. After initial consent was obtained, participating teachers received a link to the survey and were asked to complete it prior to their interview. Survey questions were mainly about whether teachers felt comfortable and prepared to teach students with disabilities in their online context. We asked these in a survey that was anonymous not to obtain generalizable data, but because we wanted to give the teachers another venue where they could reveal information to us where we were not in direct person-to-person contact with them.

Data Analysis

For analysis, we grouped the data together by question across all the participants for the interview and survey questions. Two members of the research team engaged in repeated re-readings of the data in this form to identify the expressions teachers noted during the interviews (Marshall & Rossman, 2014). Then, one of the researchers made a preliminary coding document highlighting direct responses to what the online teachers said they knew about teaching students with disabilities and how they indicated they had learned those things (Saldaña, 2015). In addition, the researcher marked specific strategies, programs, and technological devices that appeared in the transcripts. A second researcher moved through the data with the coding document and verified these identifications, adding additional items as necessary. A reconciliation meeting was held to discuss the interpretations of the data where the researchers determined how the teachers' articulations might be grouped into themes (Marshall & Rossman, 2014). Finally, the researchers made a series of visual representations. Table 3 and Figure 1 were developed as part of these visualizations.

FINDINGS

Findings from this study are divided into two sections based on the original research questions:

1. What do online teachers know about working with students with disabilities in a virtual school setting?
2. What do these teachers credit for their acquired knowledge?

Online Teachers Learned Practices about Working with Students with Disabilities

Teachers in this study described a variety of strategies and forms of assistance that they provided to students with disabilities in their online courses. Table 3 summarizes the expectations that these teachers had encountered and felt obligated to enact in their practice.

Table 3
 Knowledge Categories and Practices of Online Teachers of Students with Disabilities

Knowledge Category	Example Practices
Curriculum	<ul style="list-style-type: none"> • Following a scripted lesson plan • Removing assessment questions or tasks • Monitoring student progress through the course • Directing students to supplemental resources
Instructional groupings	<ul style="list-style-type: none"> • Asynchronous lessons • Optional synchronous lessons • Small group lessons • One-on-one lessons
Parent Communication	<ul style="list-style-type: none"> • Calling parents regularly • Emailing parents regularly • Explaining concepts to parents • Supporting parents' use of technology
Technological Supports	<ul style="list-style-type: none"> • Phone • Webcam • Text messaging • Email • Chatrooms • Text-to-speech • White board • Computer screen sharing • Online polls • Music • Microphone • Chatroom • Videos • Manipulatives • Drawing tools • Pointer tools

Teachers reported that although there were high expectations for them and their work with students, they were not in charge of the curriculum in their schools. Instead, the lessons were developed by a team in the school or purchased from an outside vendor. Their job, as they described it to us, was to demonstrate mastery of this prepackaged curriculum as a kind of script. As one participant, Erin, stated, “I don’t plan or design any curriculum... It is all given to us and you can’t modify it.”

For students with disabilities, some teachers were sometimes able to remove assessment questions or reduce the task load. But usually, the teachers monitored students’ progress through the course, provided encouragement, and offered re-teaching for low performance. For example, Kristen mentioned that she had the ability to provide graphic organizers to students who needed them for long writing assignments and many of those who did need such a support were students with disabilities. Sometimes the teachers made these types of supports on their own and sometimes they pulled from supplementary resources provided by vendors or filled in provided templates.

None of the teachers could generate the content and lessons on their own. Some seemed unbothered by this. For example, Hannah explained, “[our company] has a curriculum department and they work really hard to prepare the curriculum for all of the schools. All the curriculum is aligned with the Common Core standards.” For her, there was the appearance of implicit trust in the company. Another teacher, Nathan, offered an additional explanation. “[W]ithout giving too much away, we are as controlled by [a large company providing educational products and services] as we can be. We are actually owned by [them] ... [T]hey were part of creating the Common Core so that is our base to do instruction.” In addition, there was a sense that whether they trusted their employer or not, they would have to use the materials provided or take a professional risk.

Interviewer: What standards do you use for teaching and learning?

Kristen: We are using the Common Core standards. Our teachers are assessed using the [state] standards for teaching and learning. We also have an independent, or a local review through a performance pay system sponsored by the department of education in [my state] and so we’re doing reviews of a lot of different classroom components. Each month we highlight a different thing and supervisors are giving feedback to teachers so our teachers meet with their supervisors twice a month and we do a series of classroom observations, and... so, I guess that’s not really the tools that I’m using to create my curriculum.

As Kristen describes the performance pay system and linking it to her teaching, it seems that her original intent was to respond that she uses national standards, but then she felt that she had to justify her fidelity. She did so with a description of performance pay and administrative oversight. Then, it seemed, by the time she explained, she realized she was not talking about her curriculum planning, but her implementation of prepackaged instructional materials and she halted in apparent embarrassment. After this admission, the interviewer gave her space to clarify. Instead of talking more about the spaces she had found for personalizing curriculum or making accommodations, Kristen went on to say that she knew of other standards, but she did not use them.

Instructional groupings. Teachers also reported using a variety of instructional groupings as a strategy for meeting the needs of students with disabilities. These groupings varied from the asynchronous lessons that students could engage with at their own pace to synchronous small group lessons where students came together for additional instruction. For example, Alec reported:

[O]utside of that hour to two hours a day where I'm providing instruction to my students, the rest of my time is analyzing data about the students and reaching out to students I'm seeing through the data are struggling on certain content, and then doing either one-on-one intervention work with them or inviting them to small group intervention sessions.

Some of the teachers held these synchronous small group meetings and required students to attend, some only required struggling students to attend, and some held these groups as an entirely voluntary activity. While some teachers intentionally grouped students by what they perceived as a skill deficit in accordance with expectations for reading objective data, most did not engage in strategic groupings because they could not require students to attend small group instruction in most cases. Even so, teachers reported that students with disabilities had access to instruction in groups of varying sizes.

Students determined whether to attend or extend interactions with the teacher and their peers. The teachers lacked the power to pull a student into a group, and they had little control over the composition of the group. When students failed to attend small group activities, teachers could invite them again or enlist parents in convincing the students to come. However, putting too much pressure on students to attend small group lessons caused tension because students were promised a virtual school experience that fit their preferences and schedules.

Parent communication. Teachers reported frequent communication with parents. Hannah reported, “I get to spend time with the parents... and so because your time is 30 minutes dedicated to this family, you really do get to know the whole unit, and it is really great.” Indeed, the teachers were required to notify parents when students failed to log on for a period or when performance on an assignment was low. Teachers were also required to make periodic contact to report progress generally. Communications were usually made through phone calls, but teachers also emailed parents and sent text messages. In addition, the teachers reported that for students with disabilities, they made additional efforts to make contact more frequently, they put more effort into explaining concepts to parents so that the parent could assist the child, and they supported parents in troubleshooting technology and learning skills such as attaching documents to emails.

The increase in parent communication functioned as a critical strategy for providing support. They wanted to be able to tell the parents what the students needed to do academically, and then parents were supposed to see that the teachers’ recommendations were followed or alternatively, provide additional information to seek an alternative solution. The teachers felt that through their efforts to contact the parents of students with disabilities more often than students who were not struggling, they were exhibiting the vigilance needed to support the student. This was evident in the fact that even though teachers were contacting parents more often than students without disabilities, they did not describe this responsibility as a constraint. Instead, they saw it as something they did that truly made a difference for students and helped them look and feel like a successful online teacher of students with disabilities. However, there was no assurance that parents would take advantage of support. Cheyenne noted that working with parents was sometimes challenging because “parents are usually the education managers for their children and you can’t say, hey, go to this training to learn to work with your kid.” The teachers could recommend resources and support, but could not oversee the follow-through.

Technological support. Teachers also described a diverse range of technological supports that they used in their online classrooms. These supports are listed in Table 3. Teachers reported a wide range of uses for these tools. Hannah commented regarding the impact of online technologies on student engagement in her online classroom:

Letting [students] use the drawing tools, or letting them use the pointer tool, or even turning on their microphone was fun and ... I found a lot more buy-in, and I just found them to be more engaged in the online lessons in general.

Teachers in this study perceived that they had an abundance of knowledge regarding how to use basic tools and functions, such as webcams and email. They also described using programs such as text-to-speech, online polls, and drawing tools. These tools were referenced as instructional supports rather than assistive technology for students with disabilities, meaning that they were used with students regardless of disability status and they were not part of disability plan development. Even so, the technology supports were regarded by the teachers as being helpful for supporting students with disabilities. In fact, technological skills were a point of pride for the teachers. They felt that they knew how to use this variety of tools and so did the students. In fact, the teachers cited the opportunity to use technology as a circumstance that created engagement, even though they did not have access to a full range of ways to provide accommodations or modifications.

When we raised questions about assistive technologies to follow-up, most teachers were caught off guard and acted confused. At this point, they reiterated earlier descriptions of general technology use. We suspected that this was because they were unfamiliar with the concept of assistive technologies. If this was the case, when we asked about assistive technologies, the teachers would have been confused since they had already told us about general technology that, in their minds, was assistive, because it was supposed to help the students. Another potential reason for confusion might have been that they did understand the concept, but were simply not knowledgeable about providing or evaluating assistive technologies in their schools and for whatever reason, they did not deign to reveal that to us.

Online Teachers' Sources of Knowledge about "Good" Teaching Practices for Students with Disabilities

All participating teachers described general feelings of proficiency in their online teaching roles both in the interviews and on the survey. Specifically, teachers described perceptions of mastery in maintaining student engagement in an online environment and in building and maintaining positive student-teacher relationships with online students with disabilities. The teachers' assertion of sufficient knowledge came in tandem with their lament about the lack of preparation they received before coming to teach online and their descriptions of prepackaged curriculum. The contributing sources to their knowledge appear in Figure 1.

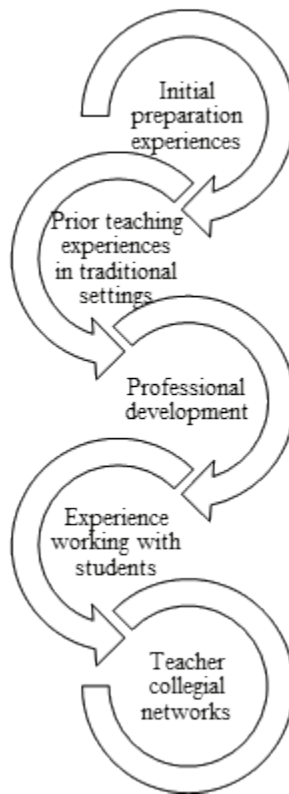


Figure 1. Online teachers' reported sources of knowledge for working with students with disabilities.

Initial preparation experiences. Teachers in this study reported that they had received no direct preparation for teaching in the online environment. Erin told us, "I had zero preparation. Like it was basically: Here's your computer." Cheyenne described the initial online teaching experience as a "trial by fire," while Hannah stated, "Honestly, I did not know what I was getting into prior to this job."

Several teachers discussed taking "technology in the classroom" courses within the context of their teacher preparation programs, but most participants reported that the technology covered in these courses seemed targeted for the traditional setting with the expectation that the teacher would see the students in person daily. Even so, Nathan told us that although the technology course he had taken was not at all dedicated to online learning, it was

still a positive preparation experience. Further, Nathan indicated that his job as a teacher was to “bridge the gap” between content presented in the course and what it took for a student to make sense of it in the online setting.

Teachers reported that the lack of initial preparation experiences was initially a barrier to working with the students but was allayed by experience. When they were hired to teach fully online, the teachers’ lack of online preparation experiences seemed to challenge their ability to teach in ways they had been used to in traditional settings. In response, the teachers took up the pre-designed coursework that they were recruited to implement and worked as hard as they could to contact parents regularly and invite students to engage in learning activities.

Prior teaching experiences in traditional settings. Reconciling understandings about traditional instruction and fully online teaching was a common interest of all the teachers in this study. All teachers reported experience teaching in traditional settings prior to their foray into teaching online, although fewer had experience teaching students with disabilities in any setting. Traditional experiences were frequently referenced as a knowledge source for practicing online teachers, alongside the need to modify these traditional practices to fit the online environment. Typically, the teachers highlighted the differences between their current positions in online environments and their previous experiences in face-to-face settings. For example, Kristen reported:

We have dedicated time when we are responsible for being with students, but if I’m talking to a student and I need help modifying something, I can send an instant message to the case manager and the case manager can conference with me and we can work on it together, right on the spot, which is amazing. I hardly ever, in my brick-and-mortar job, communicated directly with special education teachers for making modifications and accommodations. I would get a copy of the student’s IEP and they would say, “Let me know if you need anything”—except nobody had any time to talk.

While differences between teaching in a traditional versus a virtual school were highlighted as negative at times, these differences were also seen as an advantage in other cases. For example, the teachers discussed how their experiences in traditional settings allowed them to conceptualize the ways in which certain techniques might work in that environment and then modify those techniques to work online. Hannah reported, “Now I can go to a conference and I can see what they are doing, and I can spin it around in my head and think ‘Okay, how could I make this work in my environment?’” The perceived responsibility to bridge gaps between online and tradition-

al settings provided the opportunity to demonstrate agency in their online teaching roles since participants saw their previous experiences in traditional educational settings as assets.

Professional development. Professional development opportunities provided by their virtual school employers were also referenced as a source of professional knowledge and support for online educators. In the absence of initial preparation opportunities related specifically to teaching in a fully online environment, post-hire professional development became a vital source for messages about good teaching. Hannah told us: [My online school is] always trying to make sure we are doing what we should be and you know, using the latest and greatest methods and being innovative to support our families [of online students].

Teachers reported actively engaging in professional development opportunities, including monthly and bi-monthly live webinar events, on-site trainings, professional learning communities, in-person discussion-based meetings, master's-level coursework and national conference attendance. However, they also noted that few national organizations featured presentations about fully online teaching.

Although some of the development activities were mandated by their schools, all the teachers discussed the freedom they had to seek out and request additional and specific trainings in areas in which they felt less confident or skilled. In so doing, the teachers perceived that they could become active participants in their own professional education, which lead to further mastery and engagement in the profession.

Teachers also reported on the professional knowledge that they had drawn from standards and guidelines used for instructional decision making. The standards they used included individual state teaching standards, national standards as they have been interpreted and revised by states, and standards specific to their online school. Interestingly, none of the teachers that we interviewed reported the use of teaching standards more tailored to online education, such as the International Society for Technology in Education standards or the International Association for K-12 Online Learning standards, to guide them in making instructional decisions. In fact, some of the teachers that we interviewed were not aware that these online teaching standards existed at all. For example, when Cheyenne found out that such standards existed, she said she was embarrassed that she had been unaware of them and went immediately to locate the standards.

The teachers in our study also reported that each of their school's instructional materials were already built around or aligned in some way to state and national standards. Thus, some teachers were not concerned with

whether the instruction that they were providing was aligned with specific sets of standards; they assumed that standards were just being taught in the lesson materials developed by instructional designers.

While the professional development was not necessarily used as a forum for systematically learning new practices, it did help teachers connect with colleagues, which is why teachers thought it was so valuable. They felt that being able to know that they were not alone as online teachers was of great benefit since they spent much of their days in solitude or calling students and parents who may or may not respond. It also gave the teachers the opportunity to informally hear stories of practices and then assess their efficacy. Their colleagues would say “Oh, I had this problem with a student with a disability and I did this,” and the teachers would decide if the strategy was something they wanted to try. These strategies were mostly about helping students become engaged with course content.

Experience teaching students online. Even though all the teachers that we interviewed and surveyed had teaching experience in traditional settings, the idea that certain knowledge can be gained only from working in an online school emerged as an important theme. For example, Cheyenne reported:

I know when I first started, a lot of my colleagues that I worked with previously just kind of thought, “What are you doing? How can this even be a thing? How do you teach Kindergarten online?” Even going into it, I was not sure how I could do that. But as the years have passed, I could talk in more detail about what I do.

It was interesting how the participating teachers described applying for a job teaching online and taking it with no understanding of online education, especially since they could not report receiving any advance preparation for an online teaching assignment. Further, teachers reported feeling unable to advocate for themselves or even articulate information about their work to friends and family.

However, one teacher said that teaching online had been rejuvenating to his sense of success as a teacher. Alec reported that he cherished the opportunity to work with students with disabilities online because he could have individual experiences with them:

I spend a lot more time working with students with special needs [online]. In my traditional brick-and-mortar building, when students were getting intervention lessons or small group instruction, they were often being pulled into a classroom with an intervention specialist who facilitated those. Those are still offered in our school, but we emphasize much more direct contact and one-on-one attention to these students in our online environment than I *ever* saw in a brick-and-mortar building.

During the interviews, even teachers who initially reported feeling isolated did articulate the potential to work one-on-one with students as a benefit to online teaching. They felt that they might be able to meet student needs without all the multiple, simultaneous responsibilities online that they remembered from a traditional setting. However, those opportunities to work with students one-on-one as often as they wanted to or felt like they needed to, were more infrequent than they would have liked.

Teacher collegial networks. Teachers also desired to communicate with colleagues and other online teachers who would understand their unique struggles. As stated previously, sometimes this happened for some of the participating teachers through professional development. But for other teachers, networking opportunities were more scarce. Whether it was with coworkers, mentors, or supervisors, the term they all used to describe these interactions was *collaboration*. When we asked them to share advice for new online teachers, the teachers in our study brought up the necessity of seeking support and guidance from other online teachers to build a sense of mastery about teaching students online. Cheyenne reported:

If you talk to your colleagues that are learning with you, and they are trying to figure out the best way to implement something too ... why reinvent the wheel if someone has found a way to engage these kids?

In addition to colleagues in general, new teacher mentors were important to the teachers. Several discussed the importance of working with a mentor when first taking a position to assist climbing the steep learning curve while transitioning to a fully online teaching position. As these interactions occurred, the teachers took on the role of apprentice and occasionally collaborator, while striving for an enhanced sense of agency as an online educator to students with disabilities. Through this role, the teachers could take charge of what was a highly complex teaching situation and use this momentum to identify additional professional resources that enhanced their feelings of success as an online teacher of students with disabilities.

DISCUSSION

The teachers in this study placed great importance on their early teaching experiences in traditional settings, and they relied on colleagues and professional development in their current schools to continue to improve their skills in teaching online students with disabilities. However, there was considerable contradiction in what the teachers told us. The teachers described a limited ability to modify or influence the curriculum, but they

felt they were competent in delivering instruction to students with disabilities through individual tutoring. The teachers felt underprepared to teach students with disabilities online and that they had little experience with this population previously, but they also said that they drew from their traditional experiences to be successful. The teachers prided themselves on their technological skills, but could not describe ways that technology integration should be different for students with disabilities and they were largely unfamiliar with assistive technologies. The teachers said professional development was indispensable and gave them choices for professional growth, but they also were unable to name specific practices they learned from professional development activities, especially for working with students with disabilities.

The contradictions speak to the complexity of articulating knowledge of teaching students with disabilities as well as the tensions that these teachers confront daily. Something brought these people to online teaching that was so striking that they did not consider whether they had been prepared, but they persisted and believed they are doing what they can and what they need to do to help these students. However, we acknowledge that we have no data about their actual practices for students or what the achievement patterns are for students with disabilities assigned to these teachers.

Such contradictions also suggest the difficulties gathering and learning from self-report data. Since this work took a qualitative approach, our design also naturally included few participants. Therefore, while the purpose of this research was not to make a claim to broad generalization, we do acknowledge the particularity of these findings. The information gathered in this study introduces and extends findings regarding the sources from which online teachers gain pedagogical knowledge of working with students with disabilities, as well as how this knowledge is put into practice within the online environment. The study's findings provided a starting point for outlining future teacher preparation efforts. We invite additional studies in other virtual schools, across virtual schools in various states, and studies that gather information among states to establish a more solid research base around what teachers are learning about working with students with disabilities and how they are acquiring that information.

Enable Teachers as Decision Makers

This work affirms the general lack of formal preparation experiences available to prospective online teachers is consistent with the online teacher preparation literature (Archambault & Kennedy, 2014; Barbour, 2012; Fer-

dig et al., 2009; Kennedy & Archambault, 2012; Rice & Dawley, 2007). Teachers in our study felt that they did not have power over the curriculum materials in their schools. Although teachers in this study understood these circumstances to be an attempt by their employer to standardize the learning experience, they wished that they had some chance to collaborate about lesson content, and they wished that they could have more authority to add, remove, and modify lessons for students with disabilities. This is consistent with findings from Borup and Stevens (2016) and Archambault and Crippen (2009). It is unfortunate that so long after teachers' frustration on this issue had been documented, little has been done to relieve them. Additional research might look at teachers who have varying degrees of curriculum autonomy to determine how accommodations are made under different circumstances.

Leverage the Desire to Transfer Knowledge from Traditional Experiences

All teachers used learning about teaching in traditional settings to help them think about how to teach online. While it is true that the teachers in this study did not set out to teach online, their reliance on traditional experience reinforces teacher preparation programs' belief in the primacy of face-to-face experiences (Kennedy & Archambault, 2012). The actions teachers engaged in reflected their best efforts to interpret or translate what they understood about instruction in a traditional setting. Knowing that the current online teaching force is largely coming to virtual schools from traditional schools, it seems optimal for professional developers and administrators to acknowledge and facilitate teachers' transfer of knowledge rather than expecting teachers to do it on their own. However, the field must also anticipate that it will not always be the case that teachers teach first in a traditional setting and then migrate online. Future research might locate online teachers who have never taught in a traditional setting and find out what experiences they draw on as they grapple with online teaching in their early years.

Include Discussion about Students with Disabilities in Professional Development

The teachers that we engaged with reported relying heavily on professional development. Based on the findings of this study, school-level professional development for teaching students with disabilities might be aimed at

(1) determining the need for and implementing instructional accommodations, (2) optimizing the time spent in small group and one-on-one instruction, (3) supporting parents of students with disabilities, and (4) using technologies, both general and assistive, to accommodate students with disabilities.

Finally, teachers in this study did not discuss accommodating students with disabilities from a legal or even school policy perspective. This aligned with findings from Smith, Basham, Rice, and Carter (2016) who found that special education teacher educators were not discussing the legalities in the context of online teaching. If special education teachers are not addressing this, it stands to reason that general education teachers would have even less knowledge. The question for policy and potentially research is what legalities and policies around disability accommodation would be helpful for general education teachers to know?

CONCLUSION

In this study, researchers asked six fully online teachers of different grade and subject matter concentrations to describe the strategies they used to meet the educational needs of students with disabilities and to reflect on how they acquired these strategies. The teachers discussed many technology and relational tools they used to serve their students that went beyond legal accommodation, despite receiving little to no preparation in working with students with disabilities online before taking a position as an online teacher. The teachers, however, were unable to describe specialized instructional practices for students with disabilities, and they did not name specific policies or legalities specific to their work.

Teachers in his study credited their personal attempts to draw on understandings from teaching in traditional settings, as well as professional development provided through their current employers, as primary sources of information in regards to working with students with disabilities online. However, they wished they had access to additional professional development opportunities that would enable them to share their knowledge with others. Teachers may also benefit from targeted support that brings forward relevant traditional experience and builds on it for use within an online context. Therefore, teacher preparation programs might consider ways in which partnering and maintaining research relationships with online schools and experiences with students with disabilities will bring more prepared teachers to online learning and provide better support for sustaining these teachers in their work.

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References

- Archambault, L., & Crippen, K. (2009). K–12 distance educators at work: Who's teaching online across the United States. *Journal of Research on Technology in Education*, 41(4), 363-391.
- Archambault, L., & Kennedy, K. (2014). Teacher preparation for K-12 online and blended learning. In Ferdig, R. E., & Kennedy, K. (Eds.), *Handbook of research on K-12 online and blended learning* (pp. 225-244). Pittsburgh, PA: ETC Press.
- Barbour, M. (2012). Training teachers for a virtual school system: A call to action. In D. Polly, C. Mims, & K. A. Persichitte (Eds.), *Developing technology-rich teacher education programs: Key issues* (pp. 499-517). Hershey, PA: Information Science Reference.
- Barbour, M. K. (2016). Virtual education: Not yet ready for prime time? In W. J. Mathis & T. Trujillo (Eds.), *The test-based education reforms: Lessons from a failed agenda* (pp. 407-429). Charlotte, NC: Information Age Publishing.
- Biesta, G. (2015). What is education for? On good education, teacher judgment, and educational professionalism. *European Journal of Education*, 50(1), 75-87.
- Borup, J. (2016). Teacher perceptions of parent engagement at a cyber high school. *Journal of Research on Technology in Education*, 48(2), 67-83.
- Borup, J., & Stevens, M. A. (2016). Factors influencing teacher satisfaction at an online charter school. *Journal of Online Learning Research*, 2(1), 3–22.
- Brownell, M. T., Ross, D. D., Colon, & McCallum, C., L. (2005). Critical features of special education teacher preparation: A comparison with general teacher education. *The Journal of Special Education*, 38(4), 242-252.
- Collins, K. M., Green III, P. C., Nelson, S. L., & Madahar, S. (2015). Cyber charter schools and students with dis/Abilities: Rebooting the IDEA to address equity, access, and compliance. *Equity & Excellence in Education*, 48(1), 71-86.
- DiPietro, M., Ferdig, R. E., Black, E. W., & Preston, M. (2008). Best practices in teaching K-12 online: Lessons learned from Michigan Virtual School teachers. *Journal of Interactive Online Learning*, 7(1), 10-35.
- Fenstermacher, G. D., & Richardson, V. (2005). On making determinations of quality in teaching. *Teachers College Record*, 107(1), 186-213.

- Ferdig, R. E., Cavanaugh, C., DiPietro, M., Black, E. W., & Dawson, K. (2009). Virtual schooling standards and best practices for teacher education. *Journal of Technology and Teacher Education*, 17(4), 479-503.
- Individuals with Disabilities Education Improvement Act, 20 U.S.C. § 1400 (2004).
- Kennedy, K., & Archambault, L. (2012). Offering prospective teachers field experiences in K-12 online learning: A national survey of teacher education programs. *Journal of Teacher Education*, 63(3), 185-200.
- Kvale, S. (1996). *InterViews: An introduction to qualitative research interviewing*. Thousand Oaks, CA: Sage.
- Marshall, C., & Rossman, G. B. (2014). *Designing qualitative research*. Thousand Oaks, CA: Sage publications.
- Martenev, T., & Bernadowski, C. (2016). Teachers' perceptions of the benefits of online instruction for students with special education needs. *British Journal of Special Education*, 43, 178-194.
- Molnar, A., Huerta, L., Shafer, S. R., Barbour, M. K., Miron, G., & Gulosino, C. (2015). *Virtual schools in the US 2015: Politics, performance, policy, and research evidence*. National Education Policy Center.
- Rice, K. L. (2006). A comprehensive look at distance education in the K-12 context. *Journal of Research on Technology in Education*, 38(4), 425-448.
- Rice, K., & Dawley, L. (2007). *Going Virtual: The status of professional development of K-12 online teachers*. Boise ID: Boise State University.
- Rice, M., & Carter, Jr., R. A. (2015). When we talk about compliance it's because we lived it: Online educators' experiences supporting students with disabilities. *Online Learning*, 19(5), 18-36.
- Rice, M. F., & Deshler, D. D. (2018). Too many words, too little support: Vocabulary instruction in online earth science courses, *International Journal of Web-Based Learning and Teaching Technologies*, 13(2), 46-61.
- Rice, M., East, T., & Mellard, D.F. (2015). *Teacher preparation and promising practices*: School Superintendent Forum Proceedings (Report No. 7). Lawrence, KS: Center on Online Learning and Students with Disabilities, University of Kansas. http://www.centeronlinelearning.res.ku.edu/wp-content/uploads/2017/04/Superintendent_Topic_7_Summary_November2015.pdf
- Rice, M., Mellard, D. & Carter, R. A., Jr. (2016). *IDEALLY prepared: Working toward special education teacher preparation for online learning*. Lawrence, KS: Center on Online Learning and Students with Disabilities. http://www.centeronlinelearning.res.ku.edu/wp-content/uploads/2017/04/IDEALLYPrepared_SPED_TeacherPrep_for_Online_UpdatedSept20.pdf
- Rice, M., & Ortiz, K. (2016). Chapter Six: Challenges, opportunities, and lingering questions. In *Equity matters: Digital & online learning for students with disabilities*. Lawrence, KS: Center on Online Learning and Students with Disabilities. <http://www.centeronlinelearning.res.ku.edu/equity-matters-2016-digital-and-online-learning-for-students-with-disabilities/>

- Rice, M., Pace, J., & Mellard, D. (2016). *Meeting the needs of students with disabilities in K-12 online learning: An analysis of the iNACOL Standards for Quality Online Teaching*. Lansing, MI: Michigan Virtual University. Retrieved from <http://media.mivu.org/institute/pdf/MeetingNeeds4.pdf>
- Rice, M. (2017a). Analyzing text cohesion in online learning environments: Implications for students with reading difficulties. *Bordón Revista de Pedagogía*, 69(3), 107-123.
- Rice, M. (2017b). Few and far between: Describing K-12 online teachers' online professional development opportunities for students with disabilities. *Online Learning*, 21(4), 103-121.
- Rice, M. (2018). *Virtual course design: Accommodating students with disabilities*. Lansing, MI: Michigan Virtual University. Retrieved from (<https://mv-lri.org/research/publications/virtual-school-course-design-accommodating-students-disabilities/>)
- Saldaña, J. (2015). *The coding manual for qualitative researchers*. Thousand Oaks, CA: Sage.
- Smith, S. J. (2016). Invited in: Measuring UDL in online learning. Lawrence, KS: Center on Online Learning and Students with Disabilities. Retrieved from <http://www.centeronlinelearning.res.ku.edu/invited-in-measuring-udl-in-online-learning/>
- Smith, S. J., Basham, J. D., Rice, M., Carter, R. A., Jr. (2016). Preparing special education teachers for online learning: Findings from a survey of teacher educators. *Journal of Special Education Technology*, 31(3), 170-178.
- Watson, J., Pape, L., Gemin, B., & Vashaw, L. (2015). Keeping Pace with K-12 Digital Learning: An Annual Review of Policy and Practice, 2015. *Evergreen Education Group*. Retrieved from <http://www.kpk12.com>
- Zweig, J., Stafford, E., Clements, M., & Pazzaglia, A. M. (2015). *Professional experiences of online teachers in Wisconsin: Results from a survey about training and challenges*. REL 2016-110. Regional Educational Laboratory Midwest.