# Training for Online Teachers to Support Student Success: Themes from a Survey Administered to Teachers in Four Online Learning Programs

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In addition to teaching the subject matter, online teachers are tasked with supporting students' understanding of the online environment as well as students' progress, engagement, and interactions within the course. Yet only four states and the District of Columbia require teachers to receive training in online instruction prior to teaching a K–12 online course (Watson et al., 2014). Directors of three supplemental online learning programs and one consortium in the Midwest administered a survey to their teachers to gather information about teachers' preservice education and professional development, the challenges they encountered while teaching and supporting students online, and their perceived needs for additional professional development. Online teachers reported that they primarily received training while teaching online rather than during preservice education. The most commonly reported challenges were related to supporting student engagement and perseverance. The results from this survey suggest that online teachers may need additional training in multiple areas in order to best support their students. Further, the results highlight that more rigorous research is needed to determine the online instructional practices that improve student engagement, perseverance, and performance.

## TRAINING FOR ONLINE TEACHERS TO SUPPORT STUDENT SUCCESS: THEMES FROM A SURVEY ADMINISTERED TO TEACHERS IN FOUR ONLINE LEARNING PROGRAMS

The number of K–12 students enrolled in online courses has increased dramatically over the past decade (Watson, Pape, Murin, Gemin, & Vashaw, 2014), and more students are relying on their online teachers to provide effective instruction and support in an online environment. However, lower completion rates and test scores for students in online courses compared to face-to-face courses (Freidhoff, 2015; Miron, Gulosino, & Horvitz, 2015; Woodworth, Raymond, Chirbas, Gonzalez, Negassi, Snow, & Van Donge, 2015) suggest that online students may need additional supports to ensure their success in the online classroom. Consequently, online teachers are tasked with not only teaching subject matter but also supporting students' engagement, interactions, and technological skills within the online environment (iNACOL, 2011.)

The proliferation of K–12 online learning has led to increased national attention to the need for a skilled online teaching workforce and the importance of providing professional learning opportunities for preservice and in-service teachers who are teaching and supporting students in online and blended (i.e., a combination of face-to-face and online) learning environments. For example, the 2016 *National Education Technology Plan* specified the need to "develop a teaching force skilled in online and blended instruction" (U.S. Department of Education, 2016, p. 31) and the Every Student Succeeds Act (2015) included language about using funds to support efforts to train teachers, principals, or other school leaders to "effectively integrate technology into curricula and instruction" (p. 170). Despite this national attention, only Kansas, Maryland, Vermont, Virginia, and the District of Columbia require teachers to receive training in online instruction prior to teaching a K–12 online course (Watson et al., 2014).

The lack of requirements to teach online has contributed to the scarcity of information about whether online teachers engage in professional learning related to online instruction, the effectiveness of those experiences, and areas where additional supports are necessary. To build understanding of online teachers' training (i.e., preservice education and professional development) and experiences in supporting their online students, this article presents findings from a survey developed by the Regional Educational Laboratory Midwest's Virtual Education Research Alliance (Zweig, Stafford, Clements, & Pazzaglia, 2015). The Regional Educational Laboratory Midwest is one of 10 Regional Educational Laboratories (RELs) funded by the Institute of Education Sciences. The RELs work in partnership with school districts, state departments of education, and others to use data and research to improve academic outcomes for students.

The survey was designed to gather information about the preservice education and professional development in which online teachers participate, the challenges they encounter while teaching and supporting students online, and their perceived needs for additional training to better support online student success. Directors of three supplemental online learning programs and one consortium in the Midwest administered the survey to their teachers: Wisconsin Virtual School, Iowa Learning Online, Kirkwood Community College's High School Completion Program in Iowa, and Wisconsin eSchool Network. The remainder of this article focuses on themes reported by these programs across the four survey administrations. The detailed results for Wisconsin Virtual School can be found in Zweig et al. (2015).

## LITERATURE REVIEW

This section describes existing recommendations for online teacher professional development, summarizes briefly the literature on preservice education and professional development, discusses the research linking professional development to student achievement, and describes the research on the status of professional development and preservice education for online teachers.

### Professional Development Recommendations for Online Teachers

Several organizations produced recommendations for the professional development of online teachers, such as iNACOL's *Professional Development for Virtual Schooling and Online Learning* (2007), the National Education Association's (NEA's) G*uide to Teaching Online Courses* (n.d.), and Southern Regional Education Board's (SREB's) *Guidelines for Professional Development of Online Teachers* (2009). In addition, the U.S. Department of Education's *National Education Technology Plan* (2016) provided recommendations for altering preservice education and providing ongoing professional development to increase teachers' effective use of technology. Without rigorous research on professional development for online instruction, administrators of online learning programs rely on these organizations to provide guidance. These organizations share similar recommendations for content regarding student support (e.g., technology and facilitation) and attributes (e.g., professional development that is personalized, job-embedded, and ongoing).

iNACOL's (2007) recommendations conveyed the importance of differentiating professional development according to need, role, culture, and context, and of integrating virtual schooling into preservice and professional development programs. iNACOL also acknowledged that research is needed to support effective professional development in virtual education.

NEA's (n.d.) guide specified that online teachers should receive training in the following practice areas: appropriate communications, appropriate and timely feedback, facilitated discussions, facilitation of teamwork and multimedia projects, adaptation of curriculum and materials, and adaptation of online tools to support effective instruction. NEA suggested that online teachers receive help from master online teachers and that ongoing professional development modules should be available to train teachers in new methods as they emerge.

SREB's recommendations regarding the practice areas that should be covered in professional development were organized by their *Standards for Quality Online Teaching* (2006): (1) academic; (2) content knowledge, skills, and temperament for instructional technology; and (3) online teaching and learning methodology, management, knowledge, skills, and delivery. These guidelines further recommended using multiple formats for professional development, including "real-time as well as 'anytime' online training and traditional workshops" (SREB, 2009, p. 2). Recommended strategies included mentoring, viewing models of effective online teaching, hands-on training with technology tools, and reviewing the current research.

The 2016 *National Education Technology Plan* did not provide recommendations for the content of professional development, but rather suggested that professional learning should support and develop "educators' identities as fluent users of technology; creative and collaborative problem solvers; and adaptive, socially aware experts throughout their careers" (p. 34). Grounded in the literature of effective professional development (Darling-Hammond & Rothman, 2015), the plan further advised that teacher candidates should leave their preservice programs with a solid understanding of how to use technology to support student learning and that ongoing professional development should be job embedded and available on demand as needs arise.

Although the recommendations from these entities are consistent with existing research on face-to-face teaching (Darling-Hammond & Rothman, 2015; Garet et al., 2008; Yoon, Duncan, Lee, Scarloss, & Shapley, 2007), they are not confirmed by research that focuses specifically on online instruction and the additional supports that are necessary for students to learn in an online environment. One of the few studies that exists in this area compared the self-reported frequency of and confidence in performing online teaching tasks for teachers who had completed a 5-credit-hour university course to teachers who participated in a one-day face-to-face workshop (Hathaway & Norton, 2012). In this correlational study, the authors found no significant differences in frequency or confidence in performing online teaching tasks between the teachers who received the one-day workshop and those who participated in the university course. This suggests a need for additional research on the variation in online teachers' professional development and on the effectiveness of alternative strategies.

### Research on Preservice Education and Professional Development

Because there is little research focused directly on preservice education and professional development for online teachers (Archambault & Kennedy, 2014), it is informative to review research related to face-to-face environments. The research on preservice education has primarily focused on teacher candidates' attitudes; fewer studies examined how teachers' attitudes, beliefs, and understandings drive actual practice (Cochran-Smith et al., 2015). Related to the latter area of research, studies based on survey data indicated that teachers with more preparation in pedagogy and more practice teaching felt better prepared (Boe, Shin, & Cook, 2007; Kee, 2012; Ronfeldt, Schwartz, & Jacob, 2014). A study conducted by the National Research Council (2010) at the request of the U.S. Department of Education indicated that "there is little firm empirical evidence to support conclusions about the effectiveness of specific approaches to teacher preparation" (p. 4). The report further highlighted the fact that considerable variation exists among preservice programs and that little data is available on program effectiveness. One of the few studies linking aspects of preparation to teacher practice showed that teachers tend to be more effective (based on student test scores) when they have the opportunity to engage in actual teaching practices during their preservice education (Boyd, Grossman, Lankford, Loeb, & Wyckoff, 2009).

Studies primarily based on self-report and classroom observations of face-to-face teachers indicate that professional development that is ongoing, content focused, and well implemented should lead to improved teacher knowledge and skills (Garet et al., 2001; Guskey, 2009; Yoon et al., 2007). Further, research suggests that professional development programs with longer durations may be more effective than shorter ones (Ramey et al., 2011) and that coaching and mentoring are promising methods of improving teacher practice and student learning (Biancarosa et al., 2010; Glazerman et al., 2008; Kraft & Blazar, 2016; Ingersoll & Strong, 2011).

### Research Linking Professional Development to Student Achievement

The research about the effect of professional development on student achievement in face-to-face classrooms measured through test scores is mixed, with some studies finding small to moderate positive effects (Blank & de las Alas, 2009; Wallace, 2009; Yoon et al., 2007). A meta-analysis of nine experimental or quasi-experimental studies of professional development that included workshops or summer institutes with follow-up sessions (with the exception of one study) determined that there was a moderate effect on student achievement (Yoon et al., 2007). The analysis further indicated that programs that had greater than 14 hours of professional de-

velopment showed a positive and significant effect on student achievement. The small to moderate effects on student achievement may be due to the fact that the effect of professional development on student achievement requires the mediating steps of first increasing teacher knowledge and skills and then applying that knowledge and skills effectively in the classroom (Yoon et al., 2007). Further, the method for measuring improvements in student achievement must align with the intended goal of the professional development.

## Research on Professional Development and Preservice Education for Online Teachers

There is limited research on teachers' experiences related to professional development and preservice education focused on online instruction (Dawson & Dana, 2014). One large-scale survey (Going Virtual!) collected information about teachers' experiences with online teacher training in 2007, 2008, and 2010 (Rice & Dawley, 2007; Rice et al., 2008, Dawley, Rice, & Hinck, 2010). The surveys were administered to a nonrandom national sample of K–12 online teachers. In the 2010 survey, there were 830 respondents across 40 states, only two of which were from Wisconsin and none from Iowa. The 2010 respondents were from fully online schools (50%), supplemental online programs (38%), and other program types (11%).

In the 2010 Going Virtual! survey, online teachers were asked about the type and content of professional development provided to them and the areas in which respondents wanted additional professional development (Dawley et al., 2010). Twenty-five percent of new online teachers indicated that they received no training. Ongoing training sessions and workshops were the most common types of professional development that teachers reported receiving, with 94% indicating they received the training from their school or organizations. In terms of format, 53% of teachers preferred fully online facilitated professional development. The majority of teachers responded that they received training in technology, especially learning management systems, and 64% indicated that "Meeting the needs of students with disabilities in the online classroom" was an area in which they needed additional professional development. The 2008 Going Virtual! survey included open-ended questions to gather information about the challenges online teachers encounter (Rice et al., 2008). Examples of the greatest challenges reported by teachers included time management (13% of open-ended responses), students taking responsibility for their learning (11%), communication (10%) and their ability to learn and use technology (10%).

Research further suggests that teacher education programs are not pro-

viding preservice training related to online learning. Kennedy and Archambault (2012) developed and administered a survey targeted to preservice education programs in order to understand efforts to help prepare preservice teachers for K–12 online learning. The authors found that only 1.3% of the 522 respondents were offering virtual field experiences. Approximately half of the responding preservice education programs that did not offer virtual field experiences indicated that they should, and only 13% of programs indicated that they were currently planning such an experience. Beyond this survey, research in the area of preservice education related to online learning is scarce and consists primarily of case studies (Archambault & Kennedy, 2014). This may be because few programs incorporate online instruction into their current curriculum and field experiences.

The survey results reported in this article complement the existing research on professional development and preservice education. It builds on the Going Virtual! research by focusing exclusively on entities that provide supplemental online courses in two states (Iowa and Wisconsin) and by providing more information about challenges that online teachers encounter and the types of professional development that they think will help them overcome those specific challenges. In particular, this study addresses the following questions:

1. What percentage of online teachers participate in training or professional development related to K–12 online instruction? What was the timing and content of this training?

2. What challenges do online teachers face when teaching in online environments?

3. What type of training or professional development, if any, do teachers indicate would help them overcome their challenges?

The results obtained from the current survey have implications for online learning programs, preservice education programs, and virtual education researchers interested in better understanding how online teachers support student success online.

## METHOD

The research questions were addressed using survey data from three online learning programs and one consortium, all of which provide supplemental online courses in the Midwest. For the purposes of this article, the three online learning programs and one consortium will be referred to as programs. In the absence of nationally representative or state data on online teachers' experiences, this study relies on a survey to gather and synthesize information on the status of teachers' preservice education and professional

development related to online instruction. This section describes the population surveyed, the survey instrument, and the survey administration process. In addition, it describes the data analysis procedures, including the calculation of frequencies and means. For more information on the methods and for a copy of the survey instrument, see Zweig et al. (2015).

### Population

All four programs (Wisconsin Virtual School, Wisconsin eSchool Network, Iowa Learning Online, and Kirkwood Community College's High School Completion Program) provide supplemental online courses. Each provides online courses to schools and districts within a state to complement the courses that are provided in traditional face-to-face environments. Although all four programs require that online teachers be certified to teach in the respective state, neither Iowa nor Wisconsin mandates preservice or in-service training for teaching online. However, all of them offer professional development for their online teachers. The remainder of this section provides additional information about each entity that administered the survey.

Wisconsin Virtual School requires two face-to-face training days for all new online teachers, followed by online training modules and ongoing professional development available through web-based tools. Current Wisconsin Virtual School online teachers are invited to the annual training as well as all other professional development opportunities offered throughout the year. In 2014–2015, the program had 54 teachers and 5,511 course enrollments (Table 1).

Wisconsin eSchool Network, a consortium of programs, offers an eight-week online teaching course. The network consists of more than 25 partner school districts, with 217 teachers and 17,519 course enrollments in 2014–2015. Both Wisconsin Virtual School and Wisconsin eSchool Network have annual face-to-face summer workshops and professional learning communities. Partner teachers are able to access additional professional development through their districts and cooperative educational service agencies.

Iowa Learning Online, which initially required teachers to take a course in online pedagogy, provides training to new teachers and continuing professional development. Each new teacher is assigned a mentor for at least one year. In addition, Iowa Learning Online staff leads a two-day summer teacher meeting, holds monthly departmental teacher meetings, and provides just-in-time training as needed. Teacher evaluators also perform frequent web checks followed by interaction with the teachers to provide feedback. The program had 36 teachers and 1,249 course enrollments in 2014–2015.

Originally focused on credit recovery courses, Kirkwood Community College's High School Completion Program currently offers a broad range of supplemental online courses to students in Iowa. Through videoconferencing software, the program holds online professional development sessions with its instructors periodically throughout the year to share program updates, collaborate on student issues, and provide learning opportunities. It also offers online professional development courses annually to its instructors. In 2014–2015, the program had 17 teachers and 695 course enrollments.

**Table 1**
**Course Enrollments and Number of Teachers in the Programs in 2014–2015**

| Program | Course Enrollments | Number of Teachers |
|---|---|---|
| Wisconsin Virtual School | 5,511 | 54 |
| Wisconsin eSchool Network | 17,519 | 217 |
| Iowa Learning Online | 1,249 | 36 |
| Kirkwood Community College's High School Completion Program | 695 | 17 |

Sources: Gemin et al. (2015) and personal correspondence with the programs

## Survey Instrument

The survey consisted of 19 closed-ended questions targeted to K–12 online teachers. The questions included background information about the online teachers (e.g., grade levels taught); the timing, content, and format of all training they received, inclusive of preservice education and professional development; their perceived challenges teaching in an online environment; and the type of professional development that would help them address those challenges. For the purposes of this study, professional development is defined as activities aimed at increasing teachers' capabilities in K–12 online instruction. This study further distinguishes between structured professional development, which includes activities such as attending a workshop or graduate course, and unstructured professional development, which includes activities such as mentoring, participating in online forums, and conducting Internet searches.

To develop the survey, researchers drew items from Going Virtual! (Dawley et al., 2010; Rice & Dawley, 2007; Rice et al., 2008) as well as other surveys about online learning or professional development (Akiba, 2012; Clements et al., 2015; Russell, O'Brien, Bebell, & O'Dwyer, 2003; Strizek, Tourkin, & Erberber, 2014). The survey was refined through a multistep process that included cognitive interviews (Beatty & Willis, 2007)

and reviews by a teacher advisory board composed of Wisconsin and Iowa online teachers, Virtual Education Research Alliance members, and survey methods experts. There were small differences in the surveys that were administered to each program to account for their unique contexts.

## Survey Administration

All four programs administered the survey to their online teachers in fall 2014 via an online survey platform. The administrators sent initial and follow-up emails to teachers that included a link to the survey. The survey response rates ranged from 44% to 100% (Table 2). Only respondents who indicated that they taught an online course in 2013–2014 or 2014–2015 were included in the analysis.

**Table 2**
**Population and Response Rates**

| Program | Number of Teachers | Number of Respondents | Response Rate (%) | Analytic Sample |
|---|---|---|---|---|
| Wisconsin Virtual School | 54 | 49 | 91 | 48 |
| Wisconsin eSchool Network | 217 | 104 | 48 | 90 |
| Iowa Learning Online | 36 | 16 | 44 | 16 |
| Kirkwood Community College's High School Completion Program | 17 | 17 | 100 | 16 |

Note: The analytic sample refers to the number of teachers who responded to the survey and taught an online course in 2013–2014 or 2014–2015.

Sources: Gemin et al. (2015) and personal correspondence with the programs.

## Data Analysis

The survey responses were anonymous in order to reduce social desirability bias (Nederhof, 1985). Thus it was not possible to examine differences in the characteristics of teachers who did and did not respond to the survey. The researchers summarized the data for online teachers for each program separately by calculating means, minimums, maximums, and frequencies, as appropriate.

Since the survey was administered to four different programs with the goal of describing the themes that emerged across them, the results focus on the range of responses, rather than specific percentages for each. Further, because the response rates differed across programs and because the four programs combined do not represent a specific entity, it is not meaningful to pool the data to calculate a population-weighted mean. However, a simple mean of the percentages reported for the four programs is provided in the tables for reference.

## RESULTS

The characteristics of the responding online teachers varied across programs. The average number of years of online teaching experience ranged from 3.6 to 6.9 depending on the program. While nearly all teachers taught high school courses (88% to 100% of respondents in each program), the most common types of courses taught varied: required core courses (not for credit recovery) were the most common type in two of the programs, credit recovery courses were the most common type in the third program, and elective courses were the most common in the fourth. Nearly all teachers across programs reported teaching face-to-face prior to teaching online (81% to 96%), but the percentage that was concurrently teaching face-to-face and online ranged from 50% to 88%, depending on the program.

At least three-quarters of surveyed teachers in each program reported receiving training focused on K–12 online instruction (75% to 100%). Teachers reported primarily engaging in training while teaching online (63% to 88%; Table 3) rather than prior to teaching online (33% to 69%) or during preservice education (13% to 31%).[1] Nearly all teachers in each program reported that their most recent training occurred within the previous two years (83% to 100%). However, the most commonly reported formats varied across programs. Attending a multiday workshop was the most commonly reported activity for two programs, a postsecondary course or certificate program was the most common for the third, and a one-time session was most common for the fourth program.

**Table 3**
**Timing of Training Related to Online Instruction**

| Timing of Training | Minimum (%) | Maximum (%) | Mean (%) |
|---|---|---|---|
| During preservice education | 13 | 31 | 20 |
| Prior to teaching online but after preservice education | 33 | 69 | 57 |
| While teaching online | 63 | 88 | 75 |

For all programs, the highest percentage of teachers reported that they received professional development related to technology (87% to 100%; Table 4); this range is in contrast to the 25% to 44% of teachers who reported training on instructional practices to support students with special needs. Considerable variation exists across programs as to whether or not teachers received training related to online course development and customization based on the program requirements; for example, one program uses

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1 The program in which 69% of teachers indicated that they received training prior to teaching online but after preservice education is not the same program as the one that indicated that 63% received training while teaching online. For all four programs, the highest percentage of teachers indicated that they received training while teaching online.

pre-developed courses, whereas the other programs allow teachers to design or customize their courses. Responses varied on the question of whether teachers received training related to assessment and data use, but more consistent results (i.e., within 15 percentage points) were reported for facilitation, professional practice, digital etiquette, and classroom management or leadership.

**Table 4**
**Practice Areas Covered During Training**

| Practice Area | Minimum (%) | Maximum (%) | Mean (%) |
|---|---|---|---|
| Technology | 87 | 100 | 94 |
| Facilitation | 79 | 94 | 86 |
| Professional practice | 67 | 81 | 73 |
| Digital etiquette | 60 | 69 | 65 |
| Assessment and data use | 42 | 78 | 61 |
| Online course customization | 22 | 83 | 61 |
| Classroom management or leadership | 46 | 59 | 51 |
| Online course development | 18 | 58 | 46 |
| Supporting students with special needs | 25 | 44 | 34 |

Between 88% and 100% of teachers indicated that the training they received prepared them to teach online; however, 75% to 100% of respondents in each program agreed or strongly agreed that additional professional development would be beneficial. To clarify which areas future professional development programming should cover, teachers were asked to indicate whether they encountered each of 25 potential challenges related to their online instruction "to a great extent," "to some extent," or "not at all." For all programs, the most commonly reported challenges were related to supporting student engagement and perseverance. In particular, the areas in which the highest percentage of teachers indicated that they experienced a challenge included getting students to complete the course (81% to 87%), getting students to complete assignments (80% to 93%), getting students to interact with each other (86% to 88%), and keeping students engaged throughout the course (69% to 80%). Generally, the least commonly reported challenges were in areas that were unrelated to student support, such as setting course expectations (26% to 39%) or feeling isolated from colleagues (25% to 45%).

Finally, teachers generally reported that they prefer unstructured professional development (e.g., mentoring or online forums) to structured professional development (e.g., attending a workshop or graduate course) to address challenges related to student engagement and perseverance. Between 51% and 75% of teachers across programs indicated that they preferred unstructured professional development to identify strategies for encouraging students to complete assignments compared to between 17% and 38% who indicated that they preferred structured professional development (Table 5). Similarly, between 51% and 73% of teachers indicated that they preferred unstructured professional development to identify strategies for keeping students engaged throughout the course compared to 27% to 40% who indicated that they preferred structured professional development.[2]

**Table 5**

**Teacher Preferences for Unstructured Professional Development to Address Top Challenges**

| Challenges | Minimum (%) | Maximum (%) | Mean (%) |
|---|---|---|---|
| Getting students to complete the course | 51 | 75 | 63 |
| Getting students to complete assignments | 51 | 75 | 62 |
| Keeping students engaged throughout the course | 51 | 73 | 60 |
| Getting students to interact with each other | 38 | 67 | 52 |

## DISCUSSION

This section compares the results from this research study to prior research followed by implications for practice and implications for research.

### Connection to Prior Research

The finding that online teachers' main challenges were related to student perseverance and student engagement aligned with results from the Going Virtual! research. Over one third of respondents in that study identified "promoting student reflection and self-evaluation" and "promoting student autonomy, independence, and responsibility for learning" as areas in which they need or want professional development (Dawson et al., 2010, p. 25). Twenty-eight percent indicated that "promoting engagement and interaction in online activities and lessons" was an area for further training (Dawson et al., 2010, p. 25). However, survey responses differed in the area of preferred format for professional development, with workshops ranked more highly than less formal options in the Going Virtual! survey. This difference, however, may be because the Going Virtual! survey asked about professional development formats in general rather than in relation to specific challenges.

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2  Teachers were also able to indicate that additional professional development was not necessary to address their reported challenges.

There were also differences in the content of the professional development that teachers received. A higher percentage of respondents in the Going Virtual! survey reported receiving training in some of the content areas. For example, 66% of the Going Virtual! respondents received training related to students with special needs, which is higher than that reported in this study (25% to 44%), and 85% reported receiving training related to digital etiquette and responsible behavior compared to 60% to 69% reported in this study. This discrepancy may be due to differences in the population of teachers surveyed (supplemental only versus supplemental and virtual schools), in the characteristics of teachers who responded to the survey, or in the survey items.

### Implications for Practice

The results from this survey suggest that online teachers may need additional training in multiple areas in order to best support their students—in particular, in areas such as student engagement in which effective instructional strategies may differ between online and face-to-face teaching environments and in which teachers are a critical factor in student support. Since prior research has found that online student engagement is associated with student outcomes (Farrington et al., 2012; Lawson & Lawson, 2013; Pazzaglia, Clements, Lavigne, & Stafford, 2016; Rosen, Glennie, Dalton, Lennon, & Bozick, 2010), it is a topic that online learning programs should consider including in the professional development opportunities offered to teachers.

Just as online learning is expected to provide a more personalized learning experience for students (Wicks, 2010), online teachers are reporting the need for a more personalized professional development experience. Teachers' reported preferences suggest that unstructured rather than structured professional development may help them address the main challenges that they encounter teaching in an online environment. These results align with research on face-to-face instruction, which indicated that mentoring and coaching may be effective ways to improve teaching practice and student learning (Ingersoll & Strong, 2011; Kraft & Blazar, 2016) and with recommendations from the NEA, SREB and the 2016 *National Education Technology Plan* that professional development be job embedded and on demand.

Given that few online teachers in these programs received training during preservice education and that training is not required by their states, the training of online teachers has mainly been the responsibility of their online learning program employers. The four surveyed programs used the findings from this study to determine topics for future professional development (e.g., assessment, supporting students with disabilities) and to explore the possibilities for offering different formats for professional development.

These formats include professional learning communities, an "unconference" for which teacher participants choose their tracks and ways to engage with the topics and other participants, and just-in-time training opportunities through which teachers can obtain support as particular needs arise. These changes to professional development are consistent with the definition of the term in the federal Every Student Succeeds Act (2015), which proposes that professional development be sustained, collaborative, job embedded, and classroom focused. Such an approach also allows for more flexibility, which mirrors the flexibility that online learning tries to promote. Further, one of the programs is implementing complimentary policy changes to address the challenges related to student perseverance and engagement. These policies include developing milestones for contact between teachers and students and establishing online office hours, both of which are components of online student support systems.

The findings also raise an important question about whether and how teacher education programs should be providing instruction and field experiences in online learning. As noted in the literature review, a national survey of teacher education programs shows that only 1.3% of responding programs provided teacher candidates with field experiences in virtual schools (Kennedy & Archambault, 2012). A replication of this study in 2015 found a modest increase to 3.5% of programs surveyed (Archambault, Kennedy, DeBruler, Shelton, Dalal, McAllister, and Huyett, 2016).

Further, the literature on face-to-face instruction suggests that teachers feel more prepared when they have practice-based experiences during their training. Thus, practicing teaching online prior to being in the virtual classroom may help teachers feel more prepared to convey content and support their students within that environment. With an estimated 2.2 million students taking online courses nationally in 2014–2015 (Gemin et al., 2015), demand is increasing for a highly qualified online teaching workforce with specialized skills in online instruction. Teacher education programs and online learning programs may want to explore how they can work together to meet this need and better support students' success in online courses.

## Implications for Research

The results of this study suggest several directions for future research. More rigorous research is needed to determine the online instructional practices that improve student engagement, perseverance, and performance. While this study indicates that teachers in these four programs prefer unstructured to structured professional development to address their most common challenges, more research is required to test the effectiveness of different types of unstructured professional development (e.g., short online

tutorials, mentoring) for improving teaching practice in an online environment. Further, this study only addresses the online teacher's experience. Given that course quality has been cited as a concern by staff in brick-and-mortar schools (Clements, Pazzaglia, & Zweig, 2015; Clements, Pazzaglia, Stafford, & Jacobs, 2015), future research may want to examine the students', parents' and brick-and-mortar schools' perspectives on the areas in which online instructional practice and teacher support could be improved. These recommendations for future research are echoed by other researchers. For example, Archambault and Kennedy (2014) note that "additional research is needed to determine what constitutes effective online teaching and specific practices to support this effort" (p. 239). In summary, these survey results point to important considerations for online learning programs, preservice education programs, and researchers regarding the content, source, and format of training for online teachers to support their students.

Future research should also address the limitations of this research. Since the ways in which both online learning and professional development programs are administered vary greatly, the results may not be the same in other contexts. The survey could, therefore, be administered to different types of programs to determine whether different contexts lead to different results. In addition, the response rate varied across programs and in some cases was below 50%, which introduces selection bias. It may be that teachers who did not respond to the survey would have responded differently than those that did respond to the survey. Lastly, the findings in this study rely on self-reported data. Respondents may have forgotten about some of the training they received (recall bias), and it is possible that the challenges they reported facing may not align with what an external observer would indicate were their biggest challenges. Future research may investigate the alignment between teachers reported challenges and those observed by program administrators or independent observers.

## CONCLUSION

The findings from this research suggest that online teachers may benefit from additional professional development, particularly in relation to supporting student perseverance and engagement in online courses. It further documents the lack of preparation for online instruction provided during preservice education despite the fact that over two million students are being taught by online teachers. Given that these teachers are tasked with both content instruction and supporting students within the online learning environment—an environment to which many are new—there is a pressing need for more focus on supporting teachers to respond to these tasks. Preservice education programs and online learning programs should consider

providing more opportunities for both current and future online teachers to build their knowledge and skills related to student perseverance and engagement. At the same time, researchers should examine these practices to determine the most effective ways to support online teachers in their efforts to support students. Although these efforts require time and dedication from practitioners and researchers, there is the potential to enhance online teachers' instructional practices and improve students' outcomes.

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