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Preparation for Online K-12 Teachers

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ABSTRACT

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This study examined existing K-12 online teacher preparation programs in the United States to ascertain the degree to which teachers are prepared to function in online/blended classroom learning environments. This study used a content analysis approach. Research specifically targeted online teacher preparation programs implemented in institutions of higher education. The researcher collected data from state offices of education and institution deans through email surveys inquiring about the existence and capacity of K-12 online teaching endorsements, course descriptions and other course documents.

Keywords: K-12 blended learning, teacher preparation, online teaching endorsement

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DESCRIPTION OF THESIS CONTENT AND STRUCTURE

This thesis follows an article-ready format and includes an extended review of the literature. I describe three potential publication outlets for this work below. The extended literature review includes K-12 online learning growth, the extent of online teacher preparation and the standards guiding that preparation. In this article I provide a summary of the research process, the findings and proposals for future research based on this work.

I identified three possible journals for publication of the final article: *Journal of Online Learning Research* (JOLR), *Online Learning Journal* (OLJ), and *American Journal of Distance Education* (AJDE). These are tier two journals. JOLR is a fairly new journal with the sole focus being K-12 online learning. OLJ and AJDE are reputable journals with a split focus on K-12 online learning and higher education online learning. This article, as it appears in my thesis, is specifically formatted for these journals.

1. Introduction

Over the last decade, the number of K-12 students enrolled in either full time or auxiliary online classes has burgeoned. Reports show that these online enrollments increased from between 40,000 - 50,000 students in 2001 to about 4,000,000 students in 2011 (Barbour, 2012b). Students across all 50 states and the District of Columbia now have access to online schooling (Kennedy & Archambault, 2012). Schools in Alabama, Arkansas, Florida, Michigan, North Carolina, and Virginia require students to participate in some form of online learning before they graduate (Watson, Murin, Vashaw, Gemin, & Rapp, 2015).

Increasing student enrollment in online and blended courses has created a need for teachers with adequate preparation in online/blended pedagogy. According to a national survey of K-12 online teachers, less than 40% of participants had gone through professional development training prior to teaching online (Barbour, 2012b). Teachers' lack of preparation is concerning because online teaching requires different skills than those required to teach in a face-to-face classroom setting (Barbour, Siko, Gross, & Waddell, 2013). Barbour (2012a) has said, "Online teachers are required to use different strategies when determining how to reach and evaluate students when you cannot interact with them face-to-face on a daily basis" (p. 504). Teachers in face-to-face classrooms work in real-time, close, physical proximity to their students and capitalize on those conditions as they create activities and assessments for students. Conversely, teaching online requires a paradigm shift of time and space as well as a change in instructional activities, assessments and student engagement (Barbour, 2012a).

If the national survey of K-12 online teachers accurately represents national averages, it may be argued that teachers are generally unprepared to meet the demands of K-12 online and blended learning (Barbour, et al., 2013). According to Robert Blomeyer, of the North Central

Regional Educational Laboratory (NCREL), "[there is a] persistent opinion that people who have never taught in this medium can jump in and teach a class …. A good classroom teacher is not necessarily a good online teacher" (Davis & Roblyer, 2005, p. 400). Pre-service and professional development programs focused on online teaching make a large impact on the preparation and success of teachers. Preparing teachers for online education depends on pre-service and professional development programs. These programs will help develop the necessary online/blended teaching skills.

Unfortunately, limited research has been done on K-12 teacher preparation for online and blended teaching environments. Additionally, "little is known about the population of educators who teach online, especially with relationship to their teacher preparation" (Archambault, 2011, p. 74). In this study, I will examine which states have endorsements preparing online and blended teachers, what those endorsements require, and how higher education institutions are addressing those requirements.

2. Literature Review

There is a significant lack of research regarding the availability and quality of pre-service online teacher preparation programs (Archambault, 2011). This literature review illustrates the important elements of online teaching and the lack of focused preparation currently occurring in United States higher education institutions.

2.1 K-12 Online Teacher Roles

In the K-12 realm, teaching in online and blended environments requires additional teacher roles to those used in traditional face-to-face environments. Younger, K-12, students are more dependent on the adults in their lives and thus need more support from parents and teachers (Borup, 2014a). Institutions train teachers in face-to-face classrooms to give students feedback,

communicate with parents, manage behavior, deliver content, and so forth (Barbour, et al., 2013). In face-to-face settings, the students and teacher are located in one general area and interactions are based on this close proximity (Barbour, et al., 2013). In online settings, however, learning experiences must be created to bridge the gaps of space and time (Barbour, et al., 2013). Asynchronous and synchronous teaching and learning are occurring, and a trained online teacher needs to help students successfully navigate learning in such technology-mediated contexts.

Some researchers suggest that teachers be taught certain roles in order to facilitate optimal online learning (Davis, 2007). It would be beneficial to have pre-service programs preparing teachers to fulfill these online roles. Online teacher roles advocated by Davis (2007) include: (a) Virtual School Designer; (b) Virtual School Teacher; and (c) Virtual School Site Facilitator. Virtual School Designers design materials and collaborate with other faculty to create curriculum and classes. The Virtual School Teacher is similar to what we associate with a traditional teacher role. This role includes providing (a) learning activities and lessons, (b) structure through scheduling, and (c) grading and managing assessments. A Virtual School Site Facilitator acts as a mentor, records grades and performs other administrative tasks. However, all of this is done synchronously or asynchronously online through a learning management system rather than face-to-face (Barbour, 2012b).

In addition to different roles, teaching online requires specific skills. Borup frames his research around the thesis that adolescents have specialized needs, such as lower metacognitive skills, an external locus of control, and less self-discipline (Borup, West, Graham, Davies, 2014). These needs can pose a significant barrier to student success in online environments. Online settings require that students be more independent because they do not have a teacher constantly

monitoring and adjusting to their needs in a physical classroom. Online settings demand that students manage their time wisely, be proactive in contacting their teacher, and monitor their own progress. These requirements do not necessarily coincide with the developmental level of adolescents that Borup mentions. Adolescents need teachers that are trained to keep them engaged, to help them communicate regularly, and to outline expectations and timelines despite the digital distance. Face-to-face teachers can manage students' needs as they observe and interact with them on a daily basis. Traditional teachers are prepared to use specific classroom management techniques to keep students engaged and help them be successful. Meeting the needs of students in an online setting may not be intuitive for teachers and necessitates preparation programs that provide deliberate preparation and tools.

2.2 K-12 Online Teacher Skills

Specific online teaching skills must accompany general teaching skills (Davis, 2005). While general principles for good teaching can apply to both online and classroom settings, the methods may differ. Teachers need adequate preparation to implement teaching strategies that adapt curriculum to an online environment (Barbour, et al., 2013). These adaptations include the teacher eliciting communication, interaction, and student self-regulation. A teacher's ability to monitor and adjust in face-to-face settings changes when there is transactional distance between teacher and student in online environments (Moore, 2007). Assessment is necessary in a variety of synchronous and asynchronous ways that are authentic and provide accurate data. A teacher cannot rely on instinct to create a thriving online learning environment. Explicit guidance and authentic practice are required (Kennedy & Archambault, 2012).

Kennedy and Archambault (2012) created a cross-walk of skills and dispositions that online teachers should optimally possess. They are organized into the following general topics:

(a) ethics of online teaching; (b) online pedagogy, curriculum, instruction and student achievement; (c) qualifications, professional development and credentials; (d) communication/interaction, assessment and evaluation; (e) feedback, accommodations and diversity awareness; (f) management, technological knowledge, and design. For example, online classroom management skills should include a teacher knowing and transferring time management skills to students as well as establishing criteria for appropriate online behavior, such as preventing cyber bullying and protecting privacy. Teachers should have basic technological skills, an awareness of newly emerging technologies, and an ability to navigate word-processing programs and learning management systems (Archambault & Kennedy, 2014).

2.3 Standards for Online Teaching Competencies

Organizations have created standards that outline desired skills and dispositions, which teachers should exhibit to be successful in online environments. The International Association for K-12 Online Learning (iNACOL) released national standards for quality online teaching. There are eleven standards denominated A through K. Included with each standard is a table of the knowledge, understanding and abilities that a teacher would exhibit to comply with that standard (iNACOL, 2011). For example, Standard C is: "The online teacher plans, designs, and incorporates strategies to encourage active learning, application, interaction, participation, and collaboration in the online environment" (iNACOL, 2011, p. 6). Standard C′s Teacher Knowledge and Understanding states: "The online teacher knows and understands the techniques and applications of online instructional strategies, based on current research and practice (e.g., discussion, student-directed learning, collaborative learning, lecture, project-based learning, forum, small group work)" (iNACOL, 2011, p. 6). The Standard C Teacher Ability explains: "The online teacher is able to use student-centered instructional strategies that are connected to

real-world applications to engage students in learning (e.g., peer- based learning, inquiry-based activities, collaborative learning, discussion groups, self-directed learning, case studies, small group work, and guided design)" (iNACOL, 2011, p. 6).

Other organizations have developed standards, such as the Southern Regional Education Board´s (SREB) *Essential Principles for High-quality Online Teaching*; the National Education Association's (NEA) *Guide to Teaching Online Courses*; The International Society for Technology Education (ISTE); iNACOL; and Quality Matters.

2.4 Examples of Online Teaching Programs

There is limited research on the extent to which institutions have programs that explicitly prepare teachers for online environments (Kennedy & Archambault, 2012). Michael Barbour asserts that K-12 innovation needs to be matched with teacher preparation innovation (2012a). Theorists and practitioners in the 19th century believed that teachers should be prepared through practica, internships, observational learning, immersion, and mentoring. This approach to teacher preparation continues today with state departments of education in the United States requiring practica for certification (Kennedy & Archambault, 2012). Some scholars believe that teacher preparation programs should require applied cognitive apprenticeships during practica (Archambault & Kennedy, 2014). Practica provide teachers with hands-on, structured, authentic environments to learn and practice the skills of online teaching. These experiences allow teachers to transfer what they learn in pre-service programs to their classroom. Kennedy and Archambault believe that productive programs include online field experience with qualified mentor teachers (2012). However, according to a 2011-2012 national survey, only 1.3% of surveyed teacher education programs provide online training or field experiences (Kennedy & Archambault, 2012).

Kennedy and Archambault (2012) highlight exemplary teacher preparation programs. They designate the programs at Graceland University, Iowa State University, University of Florida, and University of Virginia as pioneer programs. These schools started offering online field experiences through a government grant from the Fund for the Improvement of Postsecondary Education (FIPSE) for the Teacher Education Goes Into Virtual Schooling project (TEGIVS) (Davis et al., 2007). These universities partnered with online schools and paired students with K-12 online teachers who helped them navigate the new environment for a few weeks. For example, Iowa State University (ISU) partners with Iowa Learning Online (ILO) for their one-credit course. Boise State University (BSU) partners with Idaho Digital Learning Community (IDLA) and the Idaho Department of Education to ensure that their teachers are prepared properly. BSU provides the required coursework and credit, while IDLA provides the mentor teachers and authentic environment, and the Idaho Department of Education provides the accreditation (Kennedy & Archambault, 2012).

Barbour (2012b), in one of his articles on the topic of online teacher preparation and mentoring, includes a summary of graduate certificates in online teaching and K-12 online teaching endorsements. He includes ten institutions: Arizona State University, Boise State University, California State University, Georgia Southern, Georgia State, University of Central Florida, University of California-Irvine, University of Wisconsin-Stout, Valdosta State University, and Wayne State University. Ten universities, out of hundreds of United States higher education institutions, are not adequate to prepare possibly thousands of teachers entering the field each year. Barbour sheds light on the issue by stating, “Obviously this lack of research into the design, delivery, and support of K-12 online learning has limited the ability of

universities and individual K-12 online learning programs to design effective training for pre-service and in-service teachers" (Barbour, 2012b, p.93).

3. Methods

3.1 Research Questions

The purpose of this research was to get a broad perspective regarding what is currently being done to prepare teachers for online and blended teaching. This research answered two primary research questions. The first related to state-level endorsements for online teaching and the second related to the institutional programs that implemented the state-level endorsements.

1. What are states requiring for online/blended teaching endorsements?
    a. Which states have online/blended teaching endorsements?
    b. What do the online/blended teaching endorsements require?
2. What are teacher preparation programs doing to prepare their candidates to receive state online/blended teaching endorsements?
    a. What institutions of higher education (IHE) within the endorsement states offer curriculum to fulfill the online/blended teaching endorsement?
    b. What does the curriculum look like in terms of courses and outcomes?
    c. What kind of online teaching field experience, if any, do they require?

The focus is on states with online teaching endorsements because an endorsement is evidence that preparation for online teaching is officially sanctioned within the state. Endorsements are a good starting point to explore what is happening on state and institution levels. Phase 1 of the research (RQ1a-b) addressed the state-level endorsements, while Phase 2 (RQ2a-c) addressed the institutional programs.

3.2 Context

In the United States, each state controls the licenses for teaching grades K-12 through state departments of education. Institutions of higher education (IHE) are subject to the funding and guidelines of their state's office of education. Individuals with a teaching certificate from traditional or alternative IHE are eligible to earn endorsements from the state. The individual receives an endorsement in addition to a teaching license. The endorsement identifies specialized skills or subjects the holder is authorized to teach. These endorsements can be content-specific, such as for math or literacy, or general, such as for educational technology or distance education teaching. The state typically specifies the requirements for endorsements and IHE in the state administer the coursework.

3.3 Phase 1: State Endorsement Data Collection

The goal of the data collection phase was to identify all states that offered online/blended teaching endorsements and to archive those documents for analysis. Data were collected by an undergraduate research assistant and the author of this work under the supervision of the committee chair. When the term *we* is used, it refers to this team of three. We used the following steps in the data collection:

Step 1. Web search of state offices of education (SOE) for evidence of online teaching endorsements;

Step 2. Verification of online teaching endorsement data from step 1;

Step 3. Collection of online teaching endorsement data for future analysis.

Step 1. SOE website search. To begin, we identified states with online teaching endorsements. Since states create their own curriculum and endorsement requirements, there is no single repository for what is available nationwide. Reports issued under Title II of *The*

Higher Education Opportunity Act provide a centralized directory of IHE that have teacher preparation programs. On the Title II website (https://title2.ed.gov/Public/Home.aspx) there is a list of the IHE located in each of the 50 states that offer teacher preparation programs. Additionally, the Title II site offers enrollment information, contact information for each SOE, and related data.

We began our research by using the Title II data to identify the official websites for each of the 50 SOE. We then searched these websites and contacted state education officials to verify that the state offers an online/blended teaching endorsement, and, in some cases, we requested the endorsement documentation.

As Lincoln and Guba (1985) suggest, we triangulated our findings throughout the data gathering process. To triangulate findings and narrow the search for states offering endorsements, we used a custom *Google* search engine with the SOE websites from each of the 50 states. We wanted to make sure we used a variety of terms, related to online teaching, in the *Google* search to aid in the retrieval of endorsements with varying titles. We tested several search terms including "online teaching endorsement" and "distance education certificate." We searched endorsement documents for related terms and expanded our search to include the following terms: "online teaching/teacher endorsement," "online endorsement," "online teaching certificate," "online field experience," "online practicum," "online internship experience," "online teaching and endorsement," "online teaching," "distance learning endorsement," "distance endorsement," "endorsement," "certificate," "virtual instruction," "virtual instruction endorsement," and "virtual instruction certificate." We next identified states with an endorsement outlined on their website and recorded them in a spreadsheet along with a list of contacts from the SOE.

Step 2. Verification. We sent e-mails to SOE asking for verification of the existence of an online teaching endorsement, a link to the requirements, and, if applicable, plans for the creation of an endorsement. We made phone calls to non-responders or for follow-up information from those who had responded to our initial e-mails. We kept data in a spreadsheet outlining which states have endorsements and which do not, the contact information of the SOE, and the link or document of the requirements for the endorsement. Verification turned out to be important because the state of Utah, for example, had a Distance Education endorsement on the books, but we learned that it was no longer used. Nine states are confirmed to be offering an online teaching endorsement: Georgia, Hawaii, Idaho, Louisiana, Michigan, Pennsylvania, South Carolina, South Dakota, and Vermont. Table 1 lists the states and their endorsements.

Step 3. Document collection. We were able to retrieve the documents for all nine state endorsements. The documents ranged from 1 to 35 pages in length. Some of the documents included endorsement application forms for teachers to complete and submit, while others were endorsement guides complete with online instruction frameworks and standards. Each document outlined the title of the endorsement and the requirements for obtaining it.

3.4 Phase 1: State Endorsement Data Analysis

The goal of the phase 1 data analysis was to answer the first research question and sub questions.

1. What are states requiring for online/blended teaching endorsements?
    a. Which states have online/blended teaching endorsements?
    b. What do the online/blended teaching endorsements require?

We found the answer to question 1a through the data collection process. The answer to question 1b came through the process of doing a content analysis of the collected state endorsement

documents. The coding process for this phase was fairly straightforward. After we reviewed each of the state documents, we placed them in *NVivo* and coded them for themes. We then chose a priori categories for coding the endorsement requirements and added emerging categories during the coding. The following a priori coding categories were initially used to guide the coding:

- required courses or topics;
- optional courses or topics;
- required credit hours;
- required field experiences;
- required teaching license; and
- standards used.

These a priori categories were based on related literature, background knowledge of the domain, and suggestions from a peer debriefing group of four, K-12 online learning experts outside of Brigham Young University. After initially reading through the endorsement documents and identifying requirements that fit the different categories, we added the following themes to the list of possible coding categories:

- experience as an online instructor or student; and
- options routes/requirements based on previous experience.

Then we read and coded the state documents for the curriculum topics identified. Initially every topic identified was coded individually. Then we grouped codes based on similarities. The higher-level topic codes that were identified included:

- Online Ethics/Legal/Digital Citizenship;
- Assessment;

- Tools-Skills & technology;
- Facilitation/Pedagogy/ Management;
- Design, Develop, Evaluate Courses;
- Other.

We gave the full set of coding categories with accompanying examples to the peer debriefing group for feedback. We asked this group if the codes were inclusive and logical, and we requested input on additional codes that they felt were important and not represented. The group did not add or delete any codes, but they did offer some additional insights, advice, and questions to focus on while collecting data. We read through the source documents one final time using the full set of codes.

3.5 Phase 2: Institutional Program Data Collection

The goal of the phase 2 data collection was to identify all IHE within the nine endorsement states that offered coursework to meet the state online teaching endorsement requirements and to archive relevant accessible documents including, program plans, course descriptions, and course syllabi. We used the following steps:

Step 1. Identification of IHE offering coursework for the state online teaching endorsement;

Step 2. Verification of IHE from step 1;

Step 3. Collection of IHE program documents;

Step 4. Collection of supporting documents including course descriptions and syllabi.

Step 1. Identification of IHE. The U.S. Title II reports at www.https://title2.ed.gov/Public/Home.aspx contain a list of institutions in each state that offer

teaching certificates. There are over 2,000 different institutions listed in the fifty states. This list, which provided the population of possible IHE in endorsement states, appears in Table 4.

Step 2. Verification. We searched each institution website in the nine endorsement states for an online teaching endorsement as well as for the contact information of education department deans, secretaries, or field experience coordinators. We created another custom *Google* search engine with the website of each university in the United States. Generally, IHE and state offices of education make their curriculum and endorsement requirements publically available on their website. We performed searches in that custom search engine to triangulate findings, using the keywords list created previously to ensure optimal findings in the institution search. We implemented a snowball sampling method to identify additional endorsement offering IHE (Creswell, 2008). We emailed or called college deans and asked if they offer an endorsement at their institution or who we could contact for further information. We also asked contacts if they were aware of any other institutions that offer the online or blended teaching endorsements, and if so, we requested contact information.

Step 3. Collection of program documents. We kept a spreadsheet with a list of all the IHE from endorsement states. For each IHE, we identified whether it has an available endorsement and the source of the information (a contact person and web link). We received the program documents for thirty-seven institutions.

Step 4. Collection of supporting documents. We collected curriculum documents, including course descriptions and syllabi by searching institution websites and contacting professors and department administrators. Syllabi were more difficult to retrieve than expected. As a result, we used a sample of 52 syllabi out of 164 classes in our analysis. Those syllabi were

from sixteen different IHE. However, we gathered and analyzed the required and optional course descriptions for all the classes.

3.6 Phase 2: IHE Program Data Analysis

The goal of the coding process was to address the second research question and sub questions:

2. What are teacher preparation programs doing to prepare their candidates to receive state online/blended teaching endorsements?

   a. What IHE within the endorsement states offer curriculum to fulfill the online/blended teaching endorsement?

   b. What does the curriculum look like in terms of courses and outcomes?

   c. What kind of online teaching field experience, if any, do they require?

The following is a description of the analysis process.

Step 1. Coding course descriptions for basic, organizing, and global themes. After collecting the institution endorsement documents, we created a list of the required and optional courses within those endorsements. We then searched websites and called departments for course syllabi and course descriptions. We coded the syllabi and course descriptions for themes and trends. Table 5 outlines the coding themes for required class titles and descriptions. We based the method for coding on the process outlined by Attride-Stirling (2001), using the terms "basic," "organizing" and "global" to label the three levels of analysis. We inserted all of the titles and course descriptions into *NVivo* coding software and coded each description based on the research questions, a priori codes, and emerging trends. In the end, we created over 200 basic themes, which we compared against one another and then grouped together based on similarity of content. These groups of combined basic themes became the overarching, organizing themes.

Attride-Stirling (2001) states that organizing themes represent "clusters of signification that summarize the principal assumptions of a group of basic themes so they are more abstract, and more revealing of what is going on in the text" (p. 389). We then parsed the hundreds of basic themes down to 31 groups of organizing themes.

Consolidating 31 organizing themes into six global themes was challenging. We grouped the organizing themes based on similarities. For example, "advantages/disadvantages of online teaching" was grouped with "differences between face-to-face versus online teaching." We then worded the global themes in broad terms, tweaking them to be specific yet broad enough to fit the organizing themes. We placed some organizing themes into multiple global themes. We then compared the global themes with the SREB's 2006 *Standards for Quality Online Teaching* standards and iNACOL's 2011 *National Standards for Quality Online Teaching*. The themes aligned with the standards, with a few exceptions. For example, a theme for "online field and practical experiences" was identified from the data even though it was not explicitly outlined in the SREB and iNACOL standards. Also, iNACOL has one standard, "L - The teacher collaborates with colleagues," that did not explicitly fit with any particular global theme.

We gave the peer debriefing group a table with the basic, organizing, and global themes complete with examples, asking them to examine the themes, give their general impressions of the codes and make suggestions for changes.

Step 2. Coding learning outcomes in syllabi using global themes. From sixteen IHE we received 52 syllabi, and extracted 452 learning outcomes, which were organized according to state, institution, course, and individual learning outcome. We created a code book to establish clear definitions and examples for each global theme. Two independent researchers coded a random sample of 25%, and calculated inter-rater agreement for the coding of each of the global

themes. The interrater reliability reporting method we used was the coefficient of reliability introduced by Holsti (1969). The formula to calculate the percent agreement between coders is: Coefficient of Reliability (C.R.) = 2m/ n1 + n2 (m = number of coding decisions agreed upon by the two coders; n1 = number of coding decisions made by rater 1; n2 = number of coding decisions made by rater 2). The Coefficient of Reliability shows the rater agreements per total number of coding decisions. After we established the inter-rater agreement, we discussed all discrepancies between coders and reached consensus on the coding of all learning outcomes. The calculated inter-rater agreement and kappa values were:

- Technical skills - agreement = 95.5%;
- Instructional design - agreement = 93.7%;
- Pedagogy - agreement = 89.2%;
- Ethics - agreement = 100%;
- Online/blended learning general knowledge - agreement = 93.7%;
- Online practical experience agreement = 99.1%;
- Other - agreement = 98.2%.

Step 3. Looking for patterns in course textbooks. Along with course descriptions, and learning outcomes, we looked for patterns in required course textbook listings. We listed and categorized each course's textbooks based on titles that contained online, e-learning, distance, or blended instruction. We placed any titles having to do with such topics as "educational technology," "instructional design," and "technological skills," in the "other" category. Table 13 displays the findings and patterns in course textbooks.

Step 4. Identifying data on required online teaching field-experiences. We grouped field experience course descriptions and syllabi, when available, in *NVivo*, based on similar

requirements and traits. We looked for patterns such as time requirements, supervision, class structure, and focus.

4. Results/Discussion

4.1 States Offering Online Teaching Endorsements

After scouring SOE websites and contacting SOE employees, we discovered that nine states are currently offering an endorsement for online teaching. A few other states offered an endorsement at one time and most states have multiple institutions that offer an online teaching certificate or classes. As indicated in Table 1, the endorsement titles are similar and clearly indicate the online teaching focus. South Dakota's endorsement is titled "Distance Educator" instead of "online teaching." Michigan's is titled an "Educational Technology Endorsement." We included it even though the title does not describe online learning because of feedback from a member of the expert peer debriefers panel. Michigan became the first state in the U.S. to make online learning a graduation requirement, and about half of the standards in its endorsement directly focus on online teaching and learning. Hawaii and Louisiana include the term "Add-on" in their endorsement titles because both states require the applicant to hold a current state teaching license before he or she can add an endorsement.

Table 1

States Offering an Online Teaching Endorsement

State	Name of Endorsement	Link to Endorsement Document
Georgia	Online Teaching Endorsement	http://rules.sos.state.ga.us/docs/505/3/95.pdf
Hawaii	Field of Online Teaching Add-on	http://www.htsb.org/wp-content/uploads/2014/12/OT-1009-Application.pdf
Idaho	Online Teacher Endorsement	http://www.sde.idaho.gov/cert-psc/cert/index.html
Louisiana	Online Instructor Endorsement/Add-on	https://www.teachlouisiana.net/Checklist/OnlineInstructor.pdf
Michigan	Educational Technology Endorsement	www.michigan.gov/documents/mde/EducTech_NP_SBEApprvl.5-13-08.A_236954_7.doc
Pennsylvania	Online Instruction Program Endorsement	http://www.education.pa.gov/Documents/Teachers-Administrators/Certification/20Preparation/20Programs/Specific/20Program/20Guidelines/The/20Framework/20for/20Online/20Instruction/20Program/20Endorsement/20Guidelines.pdf/
South Carolina	Online Teaching Endorsement	http://www.elearningscpd.com/portal/index.php/course-information/online-teaching-endorsement/
South Dakota	Distance Educator Endorsement	http://www.doe.sd.gov/board/packets/documents/Mar10/4_CertificationDef.pdf
Vermont	Online Teaching Specialist Endorsement	http://education.vermont.gov/documents/EDU-Memo_2013_08_21_Online_Teaching_Endorsement.pdf
Total: 9		

4.2 Online Teaching Endorsement Requirements

Table 2 summarizes the endorsement requirements for the nine states that offer endorsements. Each of the sections below elaborate on the findings in the table.

4.2.1 Required field experience. The majority of state endorsement documents require some type of online field experience. These field experiences are partnerships between the candidate and an online teacher. State endorsement documents did not specify the number of

hours of field experience required. Some states, such as Louisiana, allow previous experience as an online instructor to replace the practicum field experience.

4.2.2 Required credit hours. Credit hours required for the endorsement range from 9 to 20, which may be equivalent to about 3 to 10 courses. The Hawaii endorsement provides three options for completing required credit hours. Applicants may:

1. Show proof of completing a post-baccalaureate, masters or doctoral level preparation program in online teaching;
2. Complete a minimum of nine professional development credits in online teaching through a private/non-profit organization or school district;
3. Obtain a license/certificate/endorsement for online teaching from another state.

Vermont similarly provides applicants with various credit hour requirements, which range from 6 to 15 credits, depending on whether they have taught 1 to 3 years or taught 1 to 3 courses as an online teacher. Other states such as Louisiana and Georgia do not specify credit hour requirements.

4.2.3 Required teaching license. Most endorsements are available only for teachers in the field who already hold a license. All state endorsements, but South Dakota's, target this population. This makes preparation for online teaching available to teachers who may not have had the opportunity during their pre-service certification.

4.2.4 Standards referenced. Almost all state endorsements reference the standards on which they are based. ISTE and iNACOL (2011) standards are widely known and used. Idaho references its own standards for online teachers, which are largely based on iNACOL standards.

4.2.5 Experience as online teacher/student. One requirement we did not expect to find was experience as an online teacher or student. Six states require experience as a student, a

teacher or both. Previous online teaching or learning experience may provide applicants with insight into the field and enhance the certification process. South Carolina and Vermont did not specify whether previous experience is required.

Table 2

State Endorsement Requirements

State	Required Online Field Experience	Required Credit Hours	Required Teaching License	Standards Referenced (e.g., iNACl, ISTE, State)	Required Experience as Online Teacher/Student
GA	Yes	Unspecified	Yes	ISTE	Student (amount not specified)
HI	Yes	9/Unspecified *	Yes	iNACOL	Teacher (taught 1-10, P-12 online courses)
ID	Yes	20	Yes	State	Teacher & Student
LA	Yes ***	Unspecified	Yes	Unspecified	Unspecified
MI	Yes	20	Yes	ISTE	Teacher
PA	Yes	12	Yes	iNACOL	Teacher
SC	Unspecified	12	Yes	Unspecified	Unspecified
SD	Unspecified	18	No	ISTE	Student (3 hour online class)
VT	Yes	6-15 **	Yes	Unspecified	Unspecified

* 2 additional options do not specify credit hours but require completion of a degree/certificate/program in online teaching.
** Options based on previous online teaching experience.
*** 6 weeks as online instructor may substitute for online internship.

Curricular topics. Table 3 shows the curricular topics explicitly identified in each state document, either in required courses or as general topics that must be addressed in classes in order to receive the endorsement. The presence of these topics is outlined but not their prevalence in state endorsement documents. "Pedagogy and Management" was the only topic

addressed by every state endorsement. Every state document but one identified the topics of "Designing, Developing and Evaluating Courses" and "Online Ethics and Legal Digital Citizenship." "Assessment and technology tools/skills" appeared in the documents of seven of the nine states. Documents in four of the nine states addressed "Professional growth." Vermont included the unique topic of "Accommodating Special Needs Students." Future online teachers will need to be aware of and prepared for this important factor, especially with the influx in enrollment in online and blended classes. Not every online student is the same, and accommodations made online may not be the same as accommodations made face-to-face.

Table 3

Curricular Topics Explicitly Identified in State Documents

State	Online Ethics/Legal/ Digital Citizenship	Assessment	Tools- Skills & Technology	Facilitate/Pedagogy/ Management	Design, Develop, Evaluate Courses	Professional Growth	Other
GA	x	x	x	x	x		
HI	x	x	x	x	x		
ID	x	x		x	x	x	
LA	x	x	x	x	x		
MI	x	x	x	x	x	x	
PA		x		x	x	x	
SC	x		x	x			
SD	x		x	x	x	x	
VT	x	x	x	x	x		Accommodating students with special needs

4.3 Institutions Offering Online Teaching Endorsements

Figure 1 shows the states that offer an online/blended teaching endorsement. The numbers that appear within the states represent the number of IHEs that offer the endorsement out of the total number of institutions of higher education with teacher preparation programs in the state. The names of each of the IHE from Figure 1 appear in Table 4. The nine states with endorsements are not all in the same geographic areas. More are in the eastern United States, but some are in the other regions as well. A total of 37/248 (15%) IHE within endorsement states offer the state endorsement. Pennsylvania has the most institutions offering an endorsement. It appears that online teaching endorsements are still an early phenomenon because of the small number of states represented in Figure 1. It was surprising to find that two out of the nine states with an endorsement do not currently have state IHE offering the endorsement. This may be because some of the programs are newer than others and institution implementation takes time.

Figure 1

States and IHE offering Online Teaching Endorsement

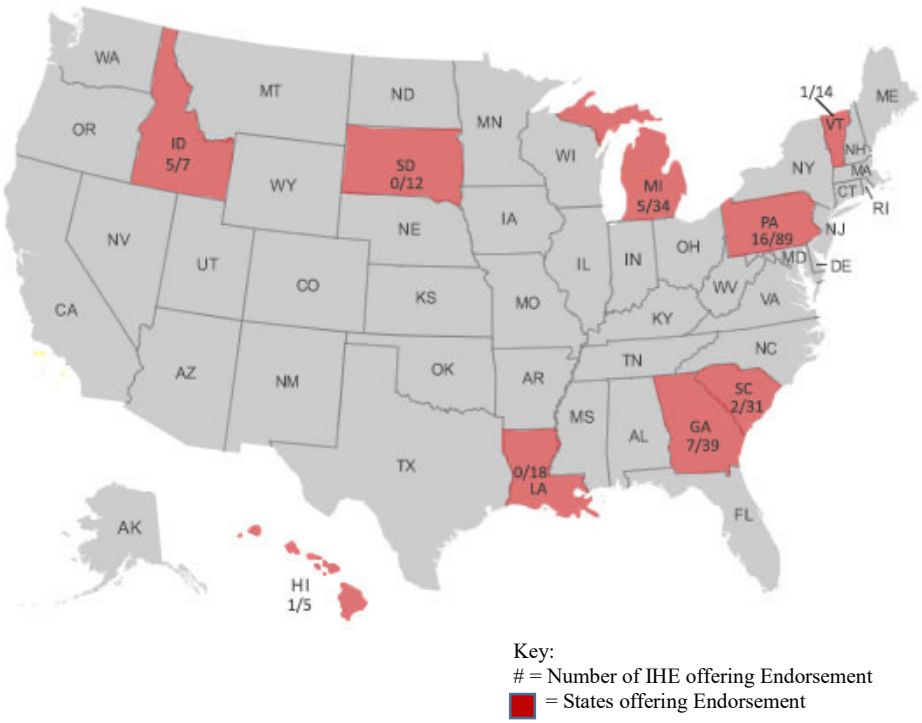

Table 4

Institutions Offering Online Teaching Endorsement

State	#	Institutions offering online teaching endorsements
ID	5	Boise State, BYU-Idaho, Lewis-Clark State College, University of Idaho
GA	7	Albany State University, Brenau University, Columbus State University, Georgia Southern University, Kennesaw State University, University of Georgia, Valdosta State University
HI	1	University of Hawaii-Manoa
LA	0	None
MI	5	Eastern Michigan University, Grand Valley State University, Michigan State University, University of Michigan-Dearborn, Wayne State University
PA	16	Bloomsburg University, Clarion University, DeSales University, Duquesne University, East Stroudsburg University, Edinboro University, Immaculata University, Kutztown University, Millersville University, Moravian College, Neumann University, Robert Morris University, Saint Vincent College, Slippery Rock University, University of Pennsylvania, Wilkes University
VT	1	Marlboro College
SC	2	Coastal Carolina University, University of South Carolina-Columbia
SD	0	None
Total	37	

4.4 Online Teaching Endorsement Curriculum

This section contains the results of coding the online teaching endorsement curriculum across each of the IHE offering the endorsement. We retrieved online teaching endorsement documents from institutions within endorsement states. From those documents, we collected and coded 164 course descriptions for required and optional courses within the endorsements. We identified thirty-one organizing themes and then further combined them into six global themes, which are listed in Table 5. The following sections will provide more detail about each of the global themes, the accompanying organizing themes and basic codes.

Table 5

Global and Organizing Themes for Course Descriptions and Titles

Global Themes	Organizing Themes
1. Technical Skills	Application of online learning and multimedia tools Content Management System (CMS) and Learning Management System strategies (LMS) Explore current and emerging technologies in K12 online teaching
2. Instructional Design	Create an online module Examine instructional design theories Design, develop, explore educational technology Best practice strategies for online course creation Analyze instructional design problems Alternative design and development methodologies Assessment for online learning
3. Online Pedagogy	Management of distance learning Making connections with students Techniques for leading online instruction Best practices of effective online instruction Examine online pedagogical practices Assessment for online learning Differentiated Instruction Instructor Roles
4. Ethics	Ethical, legal, behavioral issues Equity in connected learning
5. Online/Blended Learning, General Knowledge	Foundations of distance education Differences between face to face and online learning Current status of online teaching/learning in K-12 classrooms/schools Blended instruction/learning techniques Blended learning Historical and current trends and issues in instructional technology Analyze historical and current trends and issues in online education Advantages/disadvantages of online teaching Cost benefit/budget of online delivery Technology and education
6. Online Practical Experience	Online field experiences Implement educational technology Previous experience as an online student or teacher

4.4.1 Technical Skills

Table 6 contains the organizing themes and examples of basic themes for the Technical Skills global theme. Because we identified over 200 basic themes, only a representative sample appears in the table. Some of the required major Technical Skills involve multimedia tools, skills in using a learning management system (LMS) or content management system (CMS), as well as familiarity with emerging technologies. Most of this skill development occurs in the context of online teaching and learning. Often technical skills were used to develop online courses, modules, or activities for K-12 students.

Table 6

Global Theme 1: Technical Skills

Organizing Themes	Examples of Basic Themes and Coded Text *
1.1 Application of online learning and multimedia tools	Basic Theme: Learning Management System Coded Text: "This course addresses the advanced teaching and learning applications of a Learning Management System"
1.2 CMS and LMS Strategies	
1.3 Explore current and emerging technologies in K12 online teaching	Basic Theme: Multimedia and other development tools Coded Text: "In this class you will learn to create multimedia instructional web sites using Dreamweaver, Flash, Pinnacle Studio and other development tools"

* Note – because of the large number of basic themes identified only a representative sample is included.

4.4.2 Instructional Design

Instructional Design is the global theme encompassed in Table 7. The coded course descriptions included creating modules and courses; examining, implementing, and analyzing instructional design theories and problems; and creating assessments for online learning. To be coded in this category, the course description needed to focus on designing and developing instruction. A few themes mention game and simulation based design. In this section, some specific design theories, such as the Analyze, Design, Develop, Implement and Evaluate (ADDIE) model and Technological Pedagogical Content Knowledge (TPCK), are identified, but most course descriptions only mentioned design theories generally.

Table 7

Global Theme 2: Instructional Design

Organizing Themes	Examples of Basic Themes and Coded Text *
2.1 Create an online module 2.2 Examine instructional design theories 2.3 Design, develop, and explore educational technology 2.4 Develop best practice strategies for online course creation 2.5 Analyze instructional design problems. 2.6 Utilize alternative design and development methodologies 2.7 Assessment for online learning	Basic Theme: Create a series of online learning modules and activities. Coded Text: "Students will learn how to develop instructional materials to be delivered in a technology enhanced or web-based environment. Design documents will be used to inform creation of a series of online modules and activities." Basic Theme: Design, develop and implement online assessments. Coded Text: "Participants will gain an initial understanding of how to best design, develop and implement online assessments." Basic Theme: Use games and simulations. Coded Text: Participants will develop "[a]lternative design and development methodologies. Students form design and development teams to create engaging game-based and simulation learning experiences." Basic Theme: Learn ADDIE when designing and implementing online instruction. Coded Text: Students will "[f]ocus on using systematically researched methods of design and development for online instruction for diverse learners. Learn how to follow ADDIE, TPCK."

* Note – because of the large number of basic themes identified only a representative sample is included.

4.4.3 Online Pedagogy

The online pedagogy global theme in Table 8 describes the implementation of online teaching methods. This includes managing online learners and learning, techniques for leading

discussions and instruction, instructor roles, and effective assessment. Teaching online is different than teaching face-to-face, and these coded course descriptions demonstrate the importance of preparing teachers in the pedagogy of effective online teaching and learning. Some other basic themes mention creating personalized learning environments, establishing norms, accommodating to the needs of all learners, and assessing in a variety of ways.

Table 8

Global Theme 3: Online Pedagogy

Organizing Themes	Examples of the Basic Themes and Coded Text *
3.1 Management of distance learning 3.2 Making connections with students 3.3 Techniques for leading online instruction 3.4 Best practices of effective online instruction 3.5 Examination of online pedagogical practices 3.6 Assessment for online learning 3.7 Differentiated instruction 3.8 Instructor roles	Basic Theme: Best practices Coded Text: "Best pedagogical practices for teaching online will be examined. Other topics will include the characteristics, and needs of online learners, motivating student-student interaction, and managing online interaction." Basic Theme: Online classroom management Coded Text: "To provide students a history of online as well as topics that concern management of distance learning, instructor roles in online, etiquette of teaching online and modes of collaboration." Basic Theme: Teacher roles Coded Text: "Candidates will understand their role as an effective learning facilitator by establishing consistent and reliable expectations while giving appropriate and timely feedback to community members." Basic Theme: Diverse learners Coded Text: "The ethical professional responsibilities of meeting the need of diverse learners including students with IEP and ELL supports."

* Note – Because of the large number of basic themes identified, only a representative sample is included.

4.4.4 Ethics

The global theme, Ethics, in Table 9 is a narrow and specific group. It primarily focuses on ethical, legal and behavioral issues. Online teachers and students face issues of privacy, copyright, internet safety and etiquette. K-12 students need explicit guidance for navigating this

terrain, and so the online teacher preparation courses address these topics. Other basic themes that we coded include FERPA, digital citizenship, fair use, and acceptable use policies. Equity, in terms of access and treatment, is another aspect of ethical online teaching and learning.

Table 9

Global Theme 4: Ethics

Organizing Themes	Examples of Basic Themes and Coded Text *
4.1 Ethical, legal, behavioral issues 4.2 Equity in connected learning	Basic Theme: Copyright Coded Text: "Addresses ethical, legal, and behavioral issues related to online learning, including social participation, copyright, internet safety, and etiquette." Basic Theme: Digital citizenship Coded Text: "Legal issues with online education, confidentiality procedures/protocols, FERPA, digital citizenship, Fair Use, how to apply Acceptable Use Policies." Basic Theme: Create connected learning opportunities Coded Text: "Specific emphasis on equity, by engaging in a range of connected practices themselves as learner-teachers, both on and offline."

* Note – Because of the large number of basic themes identified only a representative sample is included.

4.4.5 General Knowledge

Online/Blended Learning General Knowledge is an overarching global theme for anything related to the theories, issues and history of online and blended teaching and learning. Codes for this global theme appear in Table 10. The courses coded in this category address the foundations of distance education, the difference between face-to-face and online learning, and the historic and current trends of online teaching and learning. Additionally, the curriculum includes the cost/benefit and budget of online delivery, technology in education, and the advantages and disadvantages of these online/blended learning models.

Table 10

Global Theme 5: Online/Blended Learning General Knowledge

Organizing Themes	Examples of Basic Themes and Coded Text *
5.1 Foundations of distance education 5.2 Difference between face-to-face and online learning 5.3 Current status of online teaching/learning in K-12 classroom/school 5.4 Blended instruction/learning techniques 5.5 Blended learning 5.6 Historical and current trends and issues in instructional technology 5.7 Analysis of historical and current trends and issues in online education 5.8 Advantages/disadvantages of online teaching 5.9 Cost benefit/budget of online delivery 5.10 Technology and education	Basic Theme: Blended learning techniques. Coded Text: "The use of blended learning techniques that enhance learning in higher education, training and development, and Pre-K-12 settings." Basic Theme: An overview of technologies used in traditional and distance classrooms. Coded text: An overview of the technologies used and those emerging as advanced technologies for teaching both at a distance and in traditional classroom settings. Basic Theme: Advantages and disadvantages of online teaching. Coded Text: "The current status of online teaching in the K-12 schools, issues in online teaching, advantages and disadvantages of online teaching, and models of online delivery instruction."

* Note – Because of the large number of basic themes identified only a representative sample is included.

4.4.6 Online Practical Experience

The online practical experience codes appear in Table 11. Most programs include an online practical experience. This practicum implements educational technology and applies online instructional design theories and pedagogical principles. We also coded in this theme any course that mentioned previous experience as an online student or teacher. Some field

experiences are integrated into courses and others are an independent course. Some of the field experiences require a certain number of practicum hours in a K-12 instructional setting, while others are not as specific with the hourly requirements.

Table 11

Global Theme 6: Online Practical Experience

Organizing Themes	Examples of Basic Themes and Coded Text *
6.1 Online field experiences. 6.2 Implementation of educational technology.	Basic Theme: 15 hours of design and teaching. Coded Text: "Supervised field experience of 15 hours in a K-12 online instructional setting. Students are matched with teachers or supervisors in local school districts or other locations where they experience designing instruction and teaching K-12 students in an online environment."
6.3 Previous experience as an online student or teacher.	Basic Theme: Online field experience. Coded Text: "Participants will be paired with real-world demands to implement technology in schools." Basic Theme: Design, delivery, and evaluation. Coded Text: "Supervised online field-based experience in design, delivery, and evaluation of standards-based content to an appropriate student population."

* Note – Because of the large number of basic themes identified only a representative sample is included.

4.5 Analysis of Course Learning Outcomes

We used the global themes identified previously to code 452 learning outcomes from 52 course syllabi identified in the IHE programs. Table 12 provides a summary of the coding with examples of learning outcomes coded into each global theme. We coded 40% (183) of the outcomes as Online Pedagogy, which we defined as the application or implementation of online skills and design, or when a skill or assessment is used for student learning. We also coded a learning outcome as online pedagogy when it described creating and maintaining a community or environment conducive to individual learning, with accommodations and norms.

The least number of course learning outcomes were coded in the online field experience global theme. We only coded outcomes in this category if they clearly related to a field experience. For example, the following three course outcomes leave no room for coding interpretation given their phrasing: (a) using data gathered in a field experience; (b) working with a cooperating teacher, or (c) gaining experience as an online student. Many of the field experiences were explicitly explained in course descriptions or schedules rather than as course learning outcomes.

We coded 119 (25%) outcomes as instructional design, which, we defined as the design and development aspect of creating games, assessments or instructional materials for online teaching/learning. Often we coded outcomes if they described the process used to design instruction or to redesign and reteach content. The course outcomes in this category only referenced the act of designing rather than describing specific instructional design strategies or theories.

We coded instructional design theories, online learning research, and historical trends as online/blended learning general knowledge; 106 (23%) of the course learning outcomes were coded in this category.

Outcomes coded as technical skills refer to specific tools or skills that practitioners will learn or develop in those specific classes. For example, many outcomes referenced learning to use web 2.0, multimedia, and social network tools. Others referenced tools related to online learning, such as using synchronous and asynchronous tools effectively. We coded 75 (17%) of the 452 total learning outcomes as technical skills.

The ethics global theme received limited representation in the learning outcomes. Only 29 (6%) dealt with ethical issues such as privacy; acceptable use policies; responsible digital

citizenship; and modeling/encouraging safe, ethical and healthy online behavior. Even though this category only represents 6% of the total learning outcomes, it is one of great importance. Ethical online behavior is similar to ethical face-to-face behavior in that everyone should be treated equitably; but there are many different legalities associated with online learning that are not present in face-to-face classrooms. Teachers need to be prepared for the ethical and legal ramifications of online/blended teaching and learning with K-12 students who are minors.

Twenty-one outcomes did not fit any of the global themes and were coded in the other category. These outcomes related to course logistics, such as candidates using APA formatting in their papers, collaborating with team members, or fulfilling a portfolio requirement. A few courses appeared to target a wider audience by including a few outcomes that referred to customer service, clients, and content matter experts.

These course outcomes and codes represent a sample of the curriculum currently utilized by IHE to prepare teachers for online/blended learning environments. The strong focus on Online Pedagogy evidences the need for teachers to learn a range of unique online/blended teaching strategies. It appears that IHE are providing an overview of the online/blended learning field, focusing on online/blended pedagogy and preparing teachers with technical and design skills. The data also reveal the possible need for greater emphasis on ethical issues in online learning.

Table 12

Course Learning Outcomes Codes

Global Code	Number of Learning Outcomes	Number of Syllabi that Mention Category	Examples
Technical Skills	75(17%)	29/52(56%)	"Use a variety of software applications applicable to a classroom setting." "Students will know and understand the online environment and that it provides several options for delivery of instruction. Students need to be familiar with the various tools and how they can be used to promote learning in a pedagogically/andragogically sound manner." "Utilize synchronous and asynchronous tools effectively (i.e., discussion boards, chat tools, electronic whiteboards, etc.)"
Instructional Design	119(26%)	42/52(81%)	"Create learning objectives for games and simulations." "Plan and prepare instruction based upon knowledge of subject matter, students, the community, and curriculum goals" "Effectively use Internet browsers, email applications and online etiquette; candidates additionally can design and maintain a module using an online course learning management system"
Online Pedagogy	183(40%)	36/52(69%)	"Assess student knowledge and instruction in a variety of ways." "Create and maintain a community by creating value, effective facilitation, and an environment of trust, establishing consistent and reliable operating norms, and supporting individuality and empowerment." "Creating a personalized learning environment for students, adapting curriculum and instruction as necessary for a diversity of students, and providing accommodations as necessary."
Ethics	29(6%)	14/52(27%)	"Advocate responsible digital citizenship." "Inform students of their right to privacy and the conditions under which their names or online submissions may be shared with others." "The program shall prepare candidates to model and encourage legal, ethical, safe and healthy behavior in an online environment."
Online-Blended learning-General Knowledge	106(23%)	37/52(71%)	"Analyze scholarly research related to the use of web-based technology for educational assessment and evaluation." "Explain how systematic approaches to educational technology differ from traditional classroom-based approaches to teaching." "Review history of distance education and current theory in distance education."
Online Practical Experience	3(0.6%)	3/52(6%)	"Using data gathered in their field experience, analyze the data looking for evidence of student learning in online/blended settings." "The program shall enable the candidate to fully experience online learning from the perspective of an online student." "Modeling collaborative knowledge construction and reflection by working with a cooperating teacher."
Other	21(5%)	14/52(27%)	"The student uses current APA guidelines for citing and referencing resources used in all aspects of the course." "Demonstrate good customer service skills including technology troubleshooting." "The candidate will demonstrate alignment with Idaho Online Teaching Endorsement Standards through the Online Teaching Portfolio."
Total:	452		

4.6 Analysis of Field Experiences

Due to the limited available syllabi, the analysis of field experiences was based on the field experience course descriptions. There were about 38 instances of practica/field experiences. A few institutions did not explicitly specify their field experience criteria. Six IHEs had field experiences embedded into one or two courses regarding technology skills/integration, instructional design, online pedagogy, ethics, or assessment. The majority of field experiences were independent courses focused on observing, managing and teaching in an online, K-12 environment. Overall, the field experiences required supervision by a professional online teacher, professor or other experienced mentor. Only a few mentioned the experience as including blended environments. Also, about half of the field experiences had a requirement that spanned from 7 hours to 60 hours or 6 to 8 weeks. Some were field experiences aligned with the participant's professional goals and could be accomplished in higher education or business settings. Field experiences provide opportunities for teachers to apply the principles and skills gained in an online endorsement program.

4.7 Analysis of Course Readings

After collecting the course syllabi, we compiled the required texts and readings, which included many e-books, textbooks, articles, and software. We focused on IHC selected textbooks to discern any patterns that might represent the knowledge base for online teacher preparation. Table 13 below lists the summary data regarding the textbooks listed in course syllabi. We grouped the textbooks into three categories based on keywords in the text title. Examples are provided. We narrowed the categories to titles related to, "Online or e-learning," "Distance Learning," "Blended Learning," and "Other." The "Other" category encompassed titles relating to such topics as educational technology, technology skills, and instructional

design. IHE appear to be using a wide variety of resources in their curriculum, with only a few instances of duplicate, required textbooks.

Table 13

Required Textbooks

Category	Number of Texts	Examples
Online, e-learning	26	*A guide to authentic E-learning* (Herrington, et al. 2010). *Building online learning communities: Effective Strategies for the Virtual Classroom* (Pallof & Pratt, 2007). *Engaging the online learner: Activities and resources for creative instruction* (Conrad & Donaldson, 2011).
Distance Learning	4	*Distance education: A systems view* (Moore & Kearsley, 2005). *Handbook of distance education* (Moore, 2007). *Teaching and learning at a distance: Foundations of distance education* (Simonson, et al. 2012).
Blended Learning	0	No examples
Other	30	*Computing Essentials: Making IT Work for You* (O'Leary, 2014). *Digital citizenship in schools* (Ribble, 2011). *Instructional design: The ADDIE approach* (Branch, 2009).

4.8 Limitations and Future Research

With the increase in K-12 online student enrollments states and institutions are responding to the need to prepare instructors for online environments. This paper specifically focused on the states offering K-12 teaching endorsements for online/blended settings and the institutions within those states that are offering supportive curriculum. As mentioned in the literature review, there are many states and institutions outside of endorsed states that are preparing teachers for online/blended classrooms. We suspect there is more going on across the country regarding online/blended teaching than is represented here. The current research represents simply one view and sample.

There may be many more states and institutions that are in the process of creating online/blended teacher preparation courses or programs. For example, Utah does not have an online teaching endorsement but Southern Utah University just launched their new Graduate Certificate in Online Learning. Brigham Young University, where the researcher is located, does not currently offer a program for online/blended teacher preparation. However, a new online teaching course is being develop by Charles Graham to address Rule R277-504 approved by the Utah State Board of Education in 2014 which states that in order for teacher preparation programs to be approved in the state of Utah they must include "coursework specifically designed to prepare teachers: . . . to teach effectively in traditional, online-only, and blended classrooms" (Utah Administrative Code, n.d., R277-504-4, R277-504-5).

Another limitation of this study was the challenge we had obtaining syllabi. Syllabi were more difficult to obtain than previously expected. Not every institution makes their syllabi publicly available to non-students or faculty. We contacted institutions requesting access to the syllabi but many did not respond. Ultimately we were only able to collect about 32% of the syllabi. As a result, course descriptions were collected for all courses and they were relied upon for the analysis of courses and field experiences to make sure that we had coverage across all of the courses.

Future research may look at all institutions across the country that have a course or program for online teaching. This approach would give a more general view of the state of online teacher preparation in the United States. Researchers could also examine other online teaching certificate programs, as well as institutions that offer courses or online field experiences. Two of the nine states with endorsements do not currently have institutions with supporting curriculum. These anomalies would also be interesting to investigate.

Conclusion

State and institution online teacher preparation programs are expanding but not at a comparable rate to the rapid increase of K-12 online student enrollments. Only nine of fifty states presently offer online teaching endorsements. In two of the nine, no institution offers the online teaching endorsement. The reason for this is unknown. This may be because of a lack of research to guide teacher preparation programs. Also, it is possible that institutions in these states are in the process of establishing and enacting policies and curriculum for online teaching. Creating approved courses and programs at the institutional level takes considerable time. If teaching in an online learning environment is a different skill set than teaching in a face-to-face learning environment, which we believe it is, and if endorsement programs are few, which we know them to be, then administrators are in a tight spot when choosing preparation programs for online teaching. These administrators will have to decide whether preparation will come through pre-service courses, an endorsement, or professional development.

The institutional data gathered and analyzed here indicate that current programs focus on online/blended pedagogy, instructional design, and the foundations of online/blended learning. As institutions or states consider creating an endorsement or offering courses it may be wise to focus on online pedagogy, instructional design and online field experience as well as to increase the focus on ethics and online safety. Not enough programs include curriculum for online privacy, acceptable use policies, safety, and legal issues. Safety is an important aspect of the online/blended classroom because it is different than face-to-face classrooms.

Additionally, there does not appear to be widely used or accepted resources for preparing online teachers. A variety of texts and resources supplement the courses that this study examined. There may be a need to develop resources for preparing online teachers around

emerging national standards. More research in this field will provide a foundation for future online preparation courses and programs.

Overall, the field of teaching in online/blended learning environments is growing, and hopefully the state and institutional examples given in this paper will provide guidance to those seeking to expand their own programs and research.

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Appendix A. Extended Literature Review

Literature Review

K-12 Online Learning Growth

Over the last decade, the number of K-12 students enrolled in either full time or auxiliary online classes has burgeoned. Online learning in colleges and universities has progressed more rapidly. In 2009, about 4 million college students were reported as enrolled in fully online courses (Picciano & Seaman, 2009). K-12 data showed that the growing online enrollments increased from between 40,000 - 50,000 students in 2001 to about 4,000,000 students in 2011 (Barbour, 2012). Students across all 50 states and the District of Columbia now have access to online schooling (Kennedy & Archambault, 2012). Online learning is especially popular in rural school districts because it enables students to enroll in courses that may not be otherwise available (Picciano & Seaman, 2009). Schools in Alabama, Arkansas, Florida, Michigan, and Virginia require students to participate in some form of online learning before they graduate (Archambault, 2014).

In this growing field, definitions and models for online and blended learning are important and create a shared language for researchers and participants. However, due to the nascent nature of the field there are multiple uses and viewpoints. Horn and Staker (2012) define blended learning as, "a formal education program in which a student learns at least in part through online delivery of content and instruction with some element of student control over time, place, path and/or pace. It is at least in part at a supervised brick-and-mortar location away from home" (p.1). Blended learning is unique because it is a mixture of face-to-face and technology enhanced learning under a teacher's supervision, in a physical school building. In 2011, The International Association for K-12 Online Learning (iNACOL) launched an *Online*

Learning Definition Project "to provide states, districts, online programs, and other organizations with a set of definitions … to develop policy, practice, and an understanding of and within the field" (iNACOL, 2011, p.1). They defined online learning as: "Education in which instruction and content are delivered primarily over the internet. Used interchangeably with Virtual learning, Cyber learning, e-learning" (iNACOL, 2011, p.1). Online learning can happen in various physical locations without direct supervision. The main differences between online and blended learning are the location and modality of instruction.

Increasing student enrollment in online and blended courses has created a need for teachers with adequate preparation in online/blended pedagogy. According to a national survey of K-12 online teachers, less than 40% of participants had gone through professional development training prior to teaching online (Barbour, 2012). Teachers' lack of preparation is concerning because online teaching requires different skills than those required to teach in a face-to-face classroom setting (Barbour, et al., 2013). Barbour has said, "Online teachers are required to use different strategies when determining how to reach and evaluate students when you cannot interact with them face-to-face on a daily basis" (p. 504). Teachers in face-to-face classrooms work in real-time, close, physical proximity to their students and capitalize on those conditions as they create activities and assessments for students. Conversely, teaching online requires a paradigm shift of time and space as well as a change in instructional activities, assessments and student engagement (Barbour 2012).

If the national survey of K-12 online teachers accurately represents national averages, it may be argued that teachers are generally unprepared to meet the demands of K-12 online and blended learning (Barbour, et al., 2013). According to Robert Blomeyer, of the North Central Regional Educational Laboratory (NCREL), "[there is a] persistent opinion that people who have

never taught in this medium can jump in and teach a class …. A good classroom teacher is not necessarily a good online teacher" (Davis & Roblyer, 2005, p. 400). Pre-service and professional development programs that are focused on online teaching make a large impact on the preparation and success of teachers. Preparing teachers for online education depends on pre-service and professional development programs. These programs will help develop the necessary online/blended teaching skills.

Unfortunately, limited research has been done on K-12 teacher preparation for online and blended teaching environments. Additionally, "little is known about the population of educators who teach online, especially with relationship to their teacher preparation" (Archambault, 2011, p. 74). There is a significant lack of research regarding the availability and quality of pre-service online teacher preparation programs (Archambault, 2011). There is a need to examine which states have endorsements preparing online and blended teachers, what those endorsements require, and how higher education institutions are addressing those requirements. Specifically, this literature review illustrates the important elements of online teaching and the lack of focused preparation currently occurring in the United States' higher education institutions.

K-12 Online Teacher Roles

In the K-12 realm, teaching in online and blended environments requires additional teacher roles to those used in traditional face-to-face environments. Even with the increasing number of online K-12 enrollments, attrition rates remain a concern (Borup, 2014b). Garrison, Anderson and Archer (2000) posit that teachers are "the binding element" in an online learning community (p. 96). Younger K-12 students are more dependent on the adults in their lives and thus need more support from teachers and parents (Borup, 2014a). Institutions train teachers in face-to-face classrooms to give students feedback, communicate with parents, manage behavior,

deliver content, and so forth (Barbour, et al., 2013). In face-to-face settings, the students and teacher are located in one general area, and interactions are based on this close proximity (Barbour, et al., 2013). In online settings, however, learning experiences must be created to bridge the gaps of space and time (Barbour, et al., 2013). Asynchronous and synchronous teaching and learning are occurring, and a trained online teacher needs to help students successfully navigate learning in such technology-mediated contexts.

Some researchers suggest that teachers be taught certain roles in order to facilitate optimal online learning (Davis, 2007). It would be beneficial to have pre-service programs preparing teachers to fulfill these online roles. Online teacher roles advocated by Davis (2007) include (a) Virtual School Designer; (b) Virtual School Teacher; and (c) Virtual School Site Facilitator. Virtual School Designers design materials and collaborate with other faculty to create curriculum and classes. The Virtual School Teacher is similar to what we associate with a traditional teacher role. This role includes providing (a) learning activities and lessons, (b) structure through scheduling, and (c) grading and managing assessments. A Virtual School Site Facilitator acts as a mentor, records grades and performs other administrative tasks. However, all of this is done synchronously or asynchronously online through a learning management system rather than face-to-face (Barbour, 2012).

Borup, Graham, and Drysdale (2014) suggested that even though the Community of Inquiry Framework (COI) (Garrison, et al., 2000) was originally designed for higher education contexts, it can offer principles for K-12 online learning. Borup changed the passive connotation of COI's "teacher presence" to "teacher engagement," thus emphasizing the action-oriented teacher role needed in the K-12 environment. Borup suggested three teacher roles that need a stronger emphasis: "nurturing, motivating and monitoring" (Borup, Graham, & Drysdale, 2014,

p.795). All online learning communities need caring teachers, but because K-12 teachers act as "quasi parents" they are expected to be more nurturing (Borup, Graham, & Drysdale, 2014, p.796). This can occur as teachers use audio communication and other tools to create an interactive environment with their students. Teachers can take more responsibilities for student engagement by effectively using classroom management, praise, and incentives. Monitoring is more challenging to do from afar. Most learning management systems (LMSs) offer learner analytics so teachers can see student use of course materials and modules. However, that would require a LMS to provide teachers with an easy-to-use dashboard from which data can be extracted to drive instruction and interaction.

In addition to different roles, teaching online requires specific skills. Borup frames his research around the thesis that adolescents have specialized needs, such as lower metacognitive skills, an external locus of control, and less self-discipline (Borup, West, Graham, Davies, 2014). These needs can pose a significant barrier to student success in online environments. Online settings require that students be more independent because they do not have a teacher constantly monitoring and adjusting to their needs in a physical classroom. Online settings demand that students manage their time wisely, be proactive in contacting their teacher, and monitor their own progress. These requirements do not necessarily coincide with the developmental level of adolescents that Borup mentions. Adolescents need teachers that are trained to keep them engaged, to help them communicate regularly, and to outline expectations and timelines despite the digital distance (SREB, 2003). Face-to-face teachers can manage students' needs as they observe and interact with them on a daily basis. Traditional teachers are prepared to use specific classroom management techniques to keep students engaged and help them be successful.

Meeting the needs of students in an online setting may not be intuitive for teachers and necessitates programs that provide deliberate preparation and tools.

K-12 Online Teacher Skills

Kennedy and Archambault (2012) created a cross-walk of skills and dispositions that online teachers optimally should possess. They are organized into the following general topics:

(a) ethics of online teaching;

(b) online pedagogy, curriculum, instruction and student achievement;

(c) qualifications, professional development and credentials;

(d) communication/interaction, assessment and evaluation;

(e) feedback, accommodations and diversity awareness; and

(f) management, technological knowledge, and design.

For example, online classroom management skills should include a teacher knowing and transferring time management skills to students as well as establishing criteria for appropriate online behavior, such as preventing cyber bullying and protecting privacy. Teachers should have basic technological skills, an awareness of newly emerging technologies, and an ability to navigate word-processing programs and learning management systems (Archambault & Kennedy, 2014).

Specific online teaching skills must accompany general teaching skills (Davis, 2005). While general principles for good teaching can apply to both online and classroom settings, the methods may differ. Teachers need adequate preparation to implement teaching strategies that adapt curriculum to an online environment (Barbour, et al., 2013). These adaptations include the teacher eliciting communication, interaction, and student self-regulation. A teacher's ability to monitor and adjust in face-to-face settings changes when there is transactional distance between

teacher and student in online environments (Moore, 1993a; Moore, 2007). Moore (1989, 1993b) and Anderson (2008) talk about three essential types of interactions that online instructors need to learn to manage: learner-instructor interactions, learner-learner interactions, and learner-content interactions. The teacher plays a role in facilitating these three interaction types. Instructors, peers, learners, and content work together to create a complete learning environment.

Online assessment is also a necessary skill. Assessments can be implemented in a variety of synchronous and asynchronous ways that are authentic and provide accurate data. A teacher cannot rely on instinct to create a thriving online learning environment. Explicit guidance and authentic practice are required (Kennedy & Archambault, 2012). Shea (2007) seeks to understand how people learn best and what makes a good learning environment. He states, "Good learning environments are learner-centered, knowledge-centered, assessment-centered, and community centered" (p.21). This would imply that teachers need the skills for creating and administering effective, online assessments. He explains further that in this environment instruction and assessment must be aligned, and that teachers need to encourage learners to make their thinking visible so that feedback and adjustments can be made. A teacher needs specific strategies to help students make their thinking visible in an online classroom. Anderson (2008) also describes an assessment-centered environment and suggests that "Understanding what is most usefully – rather than most easily – assessed is a challenge for online learning designers" (p. 49). It is easy for an online teacher to create and administer a machine-moderated assessment, but quality online learning includes assessments that encourage self-reflection and focus on processes not just end results (Anderson, 2008). Teachers may be nervous about expanding their assessment repertoire because of the possible workload increase. Anderson (2008) lists possible tools that online teachers can use to lighten that load. The list includes:

"peer grading, online tutors, simulations, virtual labs, software tools, and informal social networks" (p.50-51). Teachers need to be adequately prepared for the challenge of online learning, which is to "provide very high quantity and quality of assessment, while maintaining student interest and commitment" (p.51).

Standards for Online Teaching Competencies

Organizations have created standards that outline desired skills and dispositions, which teachers should exhibit to be successful in online environments. Some of these organizations and their literature are,

1. The Southern Regional Education Board´s (SREB) *Essential Principles for High-quality Online Teaching* (SREB, 2006);
2. The National Education Association's (NEA) *Guide to Teaching Online Courses* (NEA, 2002-2015);
3. The International Society for Technology Education's (ISTE) *ISTE Teacher Standards* (ISTE, 2016);
4. The International Association for K-12 Online Learning's (iNACOL) *Blended Learning Teacher Competency Framework* (iNACOL, 2014);
5. The International Association for K-12 Online Learning's (iNACOL) *National Standards for Quality Online Teaching* (iNACOL, 2011); and
6. The Online Learning Consortium's (OLC) *Quality Matters* standards and rubrics (OLC, 2016).

iNACOL, NEA, ISTE, and SREB are the most widely used standards in K-12 online/blended learning and the OLC standards are used widely in higher education. The K-12 standards will be highlighted below.

iNACOL National Standards for Quality Online Teaching

iNACOL released a second version of national standards for quality online teaching in 2011. National Standards for Quality Online Teaching "is designed to provide states, districts, online programs, and other organizations with a set of quality guidelines for online teaching" (iNACOL, 2011, p. 3). There are eleven standards:

1. Standard A - The online teacher knows the primary concepts and structures of effective online instruction and is able to create learning experiences to enable student success. (p. 4)
2. Standard B - The online teacher understands and is able to use a range of technologies, both existing and emerging, that effectively support student learning and engagement in the online environment. (p. 5)
3. Standard C - The online teacher plans, designs, and incorporates strategies to encourage active learning, application, interaction, participation, and collaboration in the online environment. (p.6)
4. Standard D - The online teacher promotes student success through clear expectations, prompt responses, and regular feedback. (p. 7)
5. Standard E - The online teacher models, guides, and encourages legal, ethical, and safe behavior related to technology use. (p. 9)
6. Standard F - The online teacher is cognizant of the diversity of student academic needs and incorporates accommodations into the online environment. (p.10)
7. Standard G - The online teacher demonstrates competencies in creating and implementing assessments in online learning environments in ways that ensure validity and reliability of the instruments and procedures. (p.11)

8. Standard H - The online teacher develops and delivers assessments, projects, and assignments that meet standards-based learning goals and assesses learning progress by measuring student achievement of the learning goals. (p.12)
9. Standard I - The online teacher demonstrates competency in using data from assessments and other data sources to modify content and to guide student learning. (p.13)
10. Standard J - The online teacher interacts in a professional, effective manner with colleagues, parents, and other members of the community to support students' success. (p. 15)
11. Standard K - The online teacher arranges media and content to help students and teachers transfer knowledge most effectively in the online environment. (p.16)

Included with each standard is a table of the knowledge, understanding and abilities that a teacher would exhibit to comply with that standard (iNACOL, 2011). Each standard has between 2 and 10 specific knowledge and/or abilities that support the standard. Examples of a Teacher Knowledge and Understanding and Teacher Ability for Standard C include

- **Example Knowledge and Understanding:** "The online teacher knows and understands the techniques and applications of online instructional strategies, based on current research and practice (e.g., discussion, student-directed learning, collaborative learning, lecture, project-based learning, forum, small group work)" (iNACOL, 2011, p. 6).
- **Example Teacher Ability:** "The online teacher is able to use student-centered instructional strategies that are connected to real-world applications to engage students in learning (e.g., peer- based learning, inquiry-based activities, collaborative learning, discussion groups, self-directed learning, case studies, small group work, and guided design)" (iNACOL, 2011, p. 6).

Table 14

Global Themes and Standards

Global Themes	iNACOL Standards connected to theme	ISTE Standards	SREB Standards	NEA Skills
1. Technical Skills	B & K	3		2,3,5,7,19
2. Instructional Design	A, G, H & I	2		2,3,4,5,6
3. Online Pedagogy	A, C, D, F, G, H & I	1,2	b,c,d	4,8,9,10,11,12, 13,14,15,16,17,18,
4. Ethics	E	4		13
5. Online/Blended Learning, General Knowledge	J	5	a	1
6. Online Practical Experience				

Table 14 shows a mapping between the standards and seven themes identified in this thesis. The iNACOL standards mostly focus on online pedagogy, instructional design, technological skills, ethical technology use, and professional communication. Researchers agree that, "Preservice teachers need a solid foundation in online pedagogy, instructional design for online learning environments, and online learning theory to be successful in the online classroom" (Kennedy & Archambault, 2012, p. 196). The seven standards related to online pedagogy are: A, C, D, F, G, H and I. For example, Standard A explains that, "The online teacher knows the primary concepts and structures of effective online instruction and is able to create learning experiences to enable student success" (iNACOL, 2011, p.4). It takes deliberate effort on the part of the teacher to engage students in meaningful ways and to monitor and adjust to student needs despite the transactional distance (Moore, 2007). Just like face-to-face

classrooms, online classrooms contain students from a diversity of backgrounds and with various preferences. One can see the importance of creating safe, accepting environments in standard F: "The online teacher is cognizant of the diversity of student academic needs and incorporates accommodations into the online environment" (iNACOL, 2011, p.4). The number of indicators related to online pedagogy suggests that teaching online is different than teaching face-to-face and needs to be explicitly included in teacher preparation programs.

The instructional design focused standards are A, G, H, and I. Standard G explains that: "The online teacher demonstrates competencies in creating and implementing assessments in online learning environments in ways that ensure validity and reliability of the instruments and procedures" (iNACOL, 2011, p.11). Standard I encourages teachers to use data to guide design: "The online teacher demonstrates competency in using data from assessments and other data sources to modify content and to guide student learning" (iNACOL, 2011, p.11). Training in instructional design provides a foundation for teachers as they create and properly sequence learning materials (Kennedy & Archambault, 2012).

Technological skills needed for online teaching are mentioned in standards B and K. Standard B: "The online teacher understands and is able to use a range of technologies, both existing and emerging, that effectively support student learning and engagement in the online environment." Standard K: "The online teacher arranges media and content to help students and teachers transfer knowledge most effectively in the online environment" (iNACOL, 2011, p.16). Many teachers are taught technological skills in isolation, but online teachers need to be prepared to integrate content and technology. With constantly changing technology and the availability of new tools, teachers need to develop an adaptable attitude. Teacher preparation programs have

room for improvement when preparing teachers to integrate content and technology in meaningful ways (Archambault, 2011).

Ethical practices are different in face-to-face classrooms versus online classrooms. K-12 teachers and students need to be aware of how the federal Family Educational Rights and Privacy Act (FERPA), district Acceptable Use Policies (AUP), and copyright laws affect teaching and learning activities. At times teachers may need to be prepared to step in and prevent cyber bullying or discuss academic integrity with students and their parents. Standard E explains, "The online teacher models, guides, and encourages legal, ethical, and safe behavior related to technology use" (iNACOL, 2011, p.9).

Since K-12 students often have an external locus of control and lower meta-cognitive skills (Borup, 2014a) it is important that teachers establish consistent communication with parents. Collaboration between teachers and the community can enhance student learning as they work together to create engaging lesson materials and meet the needs of students. Teachers and students expand their influence and creativity when they work together and with others. These principles are deemed important by iNACOL as evidenced by Standard J: "The online teacher interacts in a professional, effective manner with colleagues, parents, and other members of the community to support students' success" (iNACOL, 2011, p.15).

NEA Guide to Teaching Online Courses

NEA collaborated with a few other organizations, including ISTE, to create a guide for policymakers, administrators, and teachers as they launch online courses. The document states, "Unless standards for teaching online are defined, and taken seriously, we will miss the opportunity to ensure that high standards are met and maintained equally across the nation" (p.1). They declare that every student deserves a qualified online teacher just like they deserve a

qualified face-to-face teacher. High standards have been set for face-to-face teachers entering the field, but they are still being established for online teachers. There are nineteen skills outlined, some include: "providing timely feedback to students, using technology to support course design, appropriate intervention when students misbehave, etc" (p.15-19). The skills appear to cover pedagogy, instructional design, and technical skills but lack focus on ethics. However, the document describes pre-service education, professional development, an effective system, teacher skills, and more.

ISTE National Standards for Quality Online Teaching

ISTE published five technology-focused standards with four performance indicators each. The standards are:

1. Facilitate and inspire student learning and creativity;
2. Design and develop digital age learning experiences and assessments;
3. Model digital age work and learning;
4. Promote and model digital citizenship and responsibility;
5. Engage in professional growth and leadership.

ISTE's message is clear: "Effective teachers model and apply the ISTE Standards for students as they design, implement, and assess learning experiences to engage students and improve learning; enrich professional practice; and provide positive models for students, colleagues, and the community" (ISTE, 2016, p.1). The five standards encourage teachers to "demonstrate fluency in technology systems", "engage students in exploring real-world issues", "design or adapt relevant learning experiences", "promote and model digital etiquette", and "participate in local and global learning communities" (ISTE, 2016, p.1-2). Similarly, to iNACOL, these

standards address online pedagogy, instructional design, ethical online behavior, and professional development.

SREB Essential Principles for High-quality Online Teaching

SREB established The *Essential Principles of High-Quality Online Teaching* (2003), which provides a checklist to select, prepare, and evaluate online K-12 teachers. It is divided into four main areas: (a) state qualifications; (b) curriculum, instruction, and student assessment; (c) management; and (d) evaluation. The "state qualifications" section states that teachers must meet state professional teaching standards and have the necessary teaching credentials and prerequisite technology skills. The "curriculum, instruction, and student assessment" section emphasizes the importance of teachers effectively using resources to deliver instruction by complying with the Americans' with Disabilities Act. A teacher who meets the "management" section monitors students' management of their time and academic honesty. The "evaluation" standard explains that teachers accept and follow policies and procedures and ensure that students participate actively in the class.

iNACOL Blended Learning Teacher Competency Framework

Blended learning is becoming increasingly important in the K-12 realm. Schools and districts need more support as they make the transition and implement this new model of teaching and learning. iNACOL is creating a framework specifically for addressing the standard for teaching in a blended learning environment. This document was created to spark practitioner creativity and innovation, and "should be viewed as a starting point rather than prescription for the field" (iNACOL, 2014, p.5). The framework is organized into twelve competencies that fit within four domains. These competencies and domains are related to pedagogy, instructional

design, and technical skills, but they are much more focused on teacher attitudes and approaches. The four domains are: "mindsets, qualities, adaptive skills, and technical skills" (p.7).

1. Mindsets. Competencies: New vision for teaching and learning, Orientation toward change and improvement.
2. Qualities. Competencies: Grit, Transparency, Collaboration.
3. Adaptive Skills. Competencies: Reflection, Continuous improvement and innovation, Communication.
4. Technical Skills. Competencies: Data practices, Instructional strategies, Management of blended learning experience, Instructional tools.

States and institutions use all of the standards described above when creating preparation programs or endorsements for K-12 online teachers. They are standards used to measure the effectiveness of current programs and to create a foundation for improving programs. All of the various standards focus on similar areas such as online pedagogy, technology skills, ethical behavior, instructional design, professionalism, and student-centered instruction.

Examples of Online Teaching Programs

There is limited research on the extent to which institutions have programs that explicitly prepare teachers for online environments (Kennedy & Archambault, 2012). Michael Barbour asserts that K-12 innovation needs to be matched with teacher preparation innovation (2012). Theorists and practitioners in the 19th century believed that teachers should be prepared through practica, internships, observational learning, immersion, and mentoring. This approach to teacher preparation continues today with state departments of education in the United States requiring practica for certification (Kennedy & Archambault, 2012). Some scholars believe that teacher preparation programs should require applied cognitive apprenticeships during practica

(Archambault & Kennedy, 2014). Pratica provide teachers with hands-on, structured, authentic environments to learn and practice the skills of online teaching. These experiences allow teachers to transfer what they learn in pre-service programs to their classroom. Kennedy and Archambault believe that productive programs include online field experience with qualified mentor teachers (2012). However, according to a 2011-2012 national survey, only 1.3% of surveyed teacher education programs provide online training or field experiences (Kennedy & Archambault, 2012).

Kennedy and Archambault (2012) highlight exemplary teacher preparation programs. They designate the programs at Graceland University, Iowa State University, University of Florida, and University of Virginia as pioneer programs. These schools started offering online field experiences through a government grant from the Fund for the Improvement of Postsecondary Education (FIPSE) for the Teacher Education Goes Into Virtual Schooling project (TEGIVS) (Davis et al., 2007). These universities partnered with online schools and paired students with K-12 online teachers who helped them navigate the new environment for a few weeks. For example, Iowa State University (ISU) partners with Iowa Learning Online (ILO) for their one-credit course. Boise State University (BSU) partners with Idaho Digital Learning Community (IDLA) and the Idaho Department of Education to ensure that their teachers are prepared properly. BSU provides the required coursework and credit, while IDLA provides the mentor teachers and authentic environment, and the Idaho Department of Education provides the accreditation (Kennedy & Archambault, 2012).

Barbour (2012), in one of his articles on the topic of online teacher preparation and monitoring, includes a summary of graduate certificates in online teaching and K-12 online teaching endorsements. He includes ten institutions: Arizona State University, Boise State

University, California State University, Georgia Southern, Georgia State, University of Central Florida, University of California-Irvine, University of Wisconsin-Stout, Valdosta State University, and Wayne State University. Ten universities, out of hundreds of United States higher education institutions, are not adequate to prepare possibly thousands of teachers entering the field each year. Barbour sheds light on the issue by stating, "Obviously this lack of research into the design, delivery, and support of K-12 online learning has limited the ability of universities and individual K-12 online learning programs to design effective training for pre-service and in-service teachers" (Barbour, 2012, p. 93).