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Teachers' Perceptions of K-12 Online: Impacting the Design of a Graduate Course Curriculum

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Abstract

While K-12 online learning in the United States has increased exponentially, the ability of teacher education programs to adequately prepare teachers to design, deliver, and support has been deficient. A small number of universities have begun to address this deficit through the introduction of graduate certificates in online teaching. This article examines curricular changes focused on introducing in-service teachers to K-12 online learning. This design-based research study examined changes in teacher perceptions after having completed a systematic curriculum focused on K-12 online learning, as well as track revisions to that curriculum based on the data collected. The results indicate that even in a jurisdiction where online learning has become a graduation requirement, teachers often have many misconceptions about K-12 online learning. Further, planned exposure to K-12 online learning content can have significant impact on student understanding of and interest in the design, delivery, and support of K-12 online learning.

Keywords

K-12 online learning, virtual schooling, cyber schooling, teacher education

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Introduction

Online learning at the K-12 level is growing at a tremendous rate. For example, Clark (2001) estimated that there were between 40,000 and 50,000 students in the United States enrolled in distance education courses, while only 10 years later, Ambient Insights (2011) reported there were approximately four million K-12 students in the United States engaged in online learning. Further, Watson, Murin, Washaw, Gemin, and Rapp (2012) indicated that there was some form of K-12 online learning activity in all 50 states. In 2006, Michigan became the first state in the United States to require all students complete some form of online learning experience to graduate from high school, a measure that has been adopted by several other states. This growth of online learning at the K-12 level has caused dramatic changes in the design and delivery of education, at least for the student population served by these opportunities.

As K-12 online learning continues to grow and evolve, teachers need to be equipped with the knowledge and skills to adapt and teach in this environment (Davis & Rose, 2007; Harms, Niederhauser, Davis, Roblyer, & Gilbert, 2006). However, this need is not currently being met. Rice and Dawley (2007) found evidence of this gap when they reported that less than 40% of K-12 online teachers had received any professional development for teaching online. Further, Kennedy and Archambault (2012a) found less than 2% of teacher education programs included any experiences related to K-12 online learning, most of which were at the graduate level. The need to adequately prepare teachers to be able to design, deliver, and support K-12 online learning is particularly important, as states require students to have an online learning experience to graduate from high school. This article reports on a design-based research study that examined in-service teacher perceptions of a systematic curriculum that focused on K-12 online learning, and how those perceptions impacted the nature of the curriculum design.

Literature Review

Unfortunately, to date, there has been little focus in teacher education on virtual schooling or K-12 online learning pedagogy (Kennedy & Archambault, 2012a; Smith, Clark, & Blomeyer, 2005). The first systematic efforts by teacher educators to address this gap occurred at Iowa State University (ISU): *Good Practice to Inform Iowa Learning Online* and *Teacher Education Goes Into Virtual Schooling* (TEGIVS). The Good Practice to Inform Iowa Learning Online was a project funded by Roy J. Carver Charitable Trust, where ISU partnered with Iowa Public Television, Iowa Department of Education, the University of Virginia, Ottumwa Community Schools, and Wartburg College. One of the components of the Good Practice to Inform Iowa Learning Online project was to create “ten case studies of good practice and supported the development

of three exemplary courses by pioneers in Iowa who [would] lead good practice and mentor others” (Davis, Niederhauser, Compton, Lindstrom, & Schoeny, 2005, p. 342). The case studies, which have a decided focus upon courses from the science curriculum, provided users with a detailed rationale as to why the course was being offered in an online learning format, description of the course, and discussion of the online tools being used in that course. Each case study also included the course syllabi and a selection of course materials, activities, and assessments as examples.

As a follow-up to these case studies, ISU secured funding from the U.S. Department of Education’s Fund for the Improvement of Postsecondary Education and partnered with the Universities of Florida and Virginia, Graceland University, and Iowa Learning Online to create TEGIVS. The purpose of TEGIVS was “to build on that work [i.e., the Good Practice to Inform Iowa Learning Online project] to incorporate virtual schooling into pre-service teacher education” (Davis et al., 2005, p. 342). The TEGIVS project would introduce and orient new and current teachers to three roles in the virtual school environment:

Virtual school site facilitator: Mentoring and advocating
Local mentor and advocate for students(s)
Proctors and records grades

Virtual school teacher: Pedagogy and class management
Presents activities, manages pacing, rigor, and so forth
Interacts with students and their facilitators
Undertakes assessment, grading, and so forth

Virtual school designer: Course development
Design instructional materials
Works in team with teachers and a virtual school to construct the online course, and so forth (Davis, 2007)

While the project had three objectives, this introduction and orientation was addressed by the creation of “instructional materials that [were] designed to illustrate and provide experiences with virtual schooling concepts and issues” (Davis, Demiraslan, & Wortmann, 2007a, p. 29). These materials included five web-based scenarios—one for early childhood or elementary, one for elementary or middle school, and three for secondary school—that focused on different virtual schooling issues and featured a variety of different tools.

Each of these scenarios reflected four aspects of virtual schooling: pedagogy, technology, assessment, and management (Davis et al., 2007b). The scenarios had different approaches to online learning, such as didactic inquiry, problem-based learning, and other teaching strategies. They also showcased synchronous

and asynchronous software used in the virtual school environment, and individual tools including discussion boards, chat room, e-mail, and the whiteboard. The scenarios provided examples of how assessment is conducted in virtual school environments, such as reflections, proctored exams, performance-based tests and quizzes, and other authentic assessments. Finally, the scenarios outlined a variety of management issues, including communications between teacher and students, motivation for challenges, teaching technology from a distance, and encouragement to complete activities in independent environments. The use of cases, in this instance, have been found to be an effective way to create meaningful settings for teacher learning ([Putnam & Borko, 2000](#)).

However, simply exposing current and future educators to these aspects of virtual schooling does not necessarily prepare them for any of the three roles that they may be tasked with during their teaching career. As Davis and Rose (2007) cautioned, “simply viewing any online course cannot provide a rigorous experience. Quality teacher preparation requires careful selection of field experience and student teaching in the students’ content areas and grade levels” (p. 11). Further, the learning on the part of the student teacher needs to be active, both within the field experience and other courses containing K-12 online learning content ([Kennedy & Archambault, 2012a](#)). In this regard, the TEGIVS project was designed to incorporate the instructional materials in a technology integration or teaching methodology course and to provide a teaching seminar course, a 6-hour field experience component, and eventually a teaching practicum.

One challenge that programs like TEGIVS must overcome is the lack of systematic research into online teaching and learning at the K-12 level ([Barbour & Reeves, 2009](#); [Cavanaugh, Barbour, & Clark, 2009](#)). In their review, [Cavanaugh et al. \(2009\)](#) found the open source literature on virtual schooling was largely limited to practitioner reports and issues surrounding the policies governing or the technology used. Moreover, [Harms et al. \(2006\)](#) described the literature on effective teaching in virtual school environments as “often supported only by anecdotal evidence” (p. 4). In fact, Barbour (2013) chronicled the limited research related to understanding the three roles (i.e., virtual school designer, teacher, and facilitator) and outlined what was known to provide guidance for teacher education programs—which amounted to numerous studies that contained methodological limitations that were geographic- or demographic-specific ([Barbour & Adelstein, 2013](#); [Molnar et al., 2014](#)).

Even in the absence of significant research to guide the design, delivery, and support of K-12 online learning, two U.S. states have actually introduced endorsement programs to teacher certification related to online teaching ([Barbour, 2012](#)). To date, both Georgia and Idaho allow teachers who possess a valid teacher certification to obtain an additional endorsement in online teaching ([Barbour, Siko, Gross, & Waddell, 2012](#); [Kennedy & Archambault, 2012b, 2013](#)). Georgia was the first state to allow teachers to obtain this kind of

endorsement, with three university programs currently offering three or four course graduate level certificates that lead to this endorsement. In Idaho, Boise State University (BSU) provides teachers different routes to obtain an online teaching endorsement: BSU students can take a 6-course and 8-week internship graduate level certificate, or BSU students or practicing teachers can complete an electronic portfolio that demonstrate how they have achieved competency in meeting each of the proficiencies (Yang & Rice, 2015). Finally, while not an online teaching endorsement, the State of Michigan revised their educational technology endorsement so that over half of the standards focus upon online learning (Barbour et al., 2012). In addition to these endorsement programs, many other universities have created certificates in online teaching to attempt to address the lack of training provided to teachers in the virtual school environment (Archambault, 2011; Archambault, DeBruler, & Freidhoff, 2014; Archambault & Kennedy, 2014; Archambault & Larson, 2015; Kennedy & Archambault, 2012b, 2012c).

Methodology

As a result of the online learning graduation requirement, in 2008, Michigan added three curricular areas to their *Standards for the Preparation of Teachers in Educational Technology* related to online technology experience and skills, course design, and delivery to prepare teachers to support students in meeting this new requirement. These new standards necessitate programmatic curriculum changes to universities in Michigan that offered the educational technology endorsement. At Wayne State University (WSU), those changes were made primarily in a single course—*IT6230: Internet in the Classroom*.

The purpose of this design-based research study was to gather in-service teachers' perceptions about online learning (Reeves, 2006). This general purpose led to the following research questions:

1. What are in-service teacher perceptions of K-12 online learning?
2. How do those perceptions impact future curricular design?

The first research question was a replication of Compton, Follett, and Demiraslan (2007), which was an examination of in-service teachers' perceptions of the TEGIVS materials.

Data collected from students enrolled in IT6230 (referred to as learners for the remainder of the article) included the blog entries and the comments associated with each entry, individual and group projects, and student evaluations of teaching (SETs) for each semester. Data were analyzed by one of the researchers using an inductive analysis approach (LeCompte & Preissle, 1993), and constant comparative coding (Ezzy, 2002), using *Microsoft Word*[®] following the four-stage procedure outlined by Ruona (2005). During Stage 1, we prepared the data

by adding the data to a formatted, six-column table. Stage 2 called for a familiarization of the data by “reading and rereading the data, jotting notes and memos about what I see and what I think is going on in the data” (Ruona, 2005, p. 240). During Stage 3, the data were coded, which allowed for the identification and development of concepts and insights through close examination of and reflection on the data (Emerson, Fretz, & Shaw, 1995). Finally, during Stage 4—or generating meaning—we grouped the concepts that had been identified into categories (Strauss & Corbin, 1990), developed the specific properties and dimensions, and considered potential category integration or splitting of categories until we were left with a set of core categories (Pidgeon & Henwood, 2004), from which we generated themes and identified key quotes.

The Setting

WSU is a large, publicly funded, research-extensive university in Michigan. The College of Education was approved by the State of Michigan’s Department of Education to offer courses leading to the Educational Technology endorsement. Over the past 5 years, the Instructional Technology program at WSU developed and adopted curriculum, in IT6230, to support in-service teachers with understanding of K-12 online learning in their own schools. The overarching purpose of the course was to introduce learners to the three virtual schooling roles: facilitator, teacher, and designer. However, as most middle and high school teachers in Michigan were more likely to play the role of the facilitator, the majority of course activities focused on that role.

Year one. Fourteen graduate learners enrolled in the course during the Winter semester, and nine volunteered to participate in the research study. The course was offered in a hybrid fashion, meaning that some weeks the class met face-to-face and other weeks the class met online—both synchronously and asynchronously (with approximately five of the fifteen weeks being delivered online). The course began with a focus on Web 2.0 technologies for the first 8 weeks (e.g., blogging, RSS, wikis, microblogging, social networking, etc.), and learners then completed activities related to the TEGIVS curriculum for the final 5 weeks. These activities included the five TEGIVS scenarios, readings related to K-12 online learning, reflective discussions, and projects from the TEGIVS curriculum.

Learners were also required to post entries on their blogs in response to prompts posted by the instructor. The purpose of this activity was for learners to reflect on their own opinions and experiences, along with relating those to the class literature that they were reading and the discussions they had in class. The individual project, from the TEGIVS curriculum, required learners to explore the nature of K-12 online learning using the five TEGIVS scenarios. This exploration included the learners reviewing the content of each of the five scenarios

and associated resources, undertaking a task that required learners to use knowledge gained from the specific scenario, and completing a structured notes sheet for each scenario. The group project had learners use the TEGIVS scenarios to create a presentation and short written report. Learners self-selected their groups, and the deliverables were submitted in person during the final class session.

The role of the teacher in this course was primarily as a facilitator. Content and activities related to both the Web 2.0 tools and K-12 online learning was created in advance of the course and housed in the university's learning management system. In the face-to-face classes, the instructor would usually take 10 to 20 minutes to introduce the topic and provide an overview of the content the learners were expected to complete. During the remaining time, the instructor would circulate through the room to help facilitate the learners moving through the content. In the weeks where learners were responsible for online asynchronous content, the instructor would spend out an introduction message at the beginning of the week to outline the week's activities. The online synchronous classes were conducted in the *Wimba* virtual classroom and using *UStream*. During these synchronous classes, the instructor would provide an overview of the features of the synchronous tool that was being used, how it could be used to teach online, and then provide direct instruction on topics such as learning styles and generational differences.

Year 2. Seven graduate learners enrolled in the course during the following Winter semester, and five volunteered to participate in the research study. The course was again offered in a hybrid format, with modifications to the content and coverage based on data collected from the previous course offering (see the Implications for Course Design subsection for a discussion of these modifications).

Results and Discussion

Each of the themes from the two semesters are contrasted with the original Compton et al. (2007) study, with the Year 2 themes also being contrasted with the year one data ([Barbour & Unger, 2009](#)).

Year One Themes

There were four dominant themes from the year one data. The first theme focused on the perceived benefits and drawbacks of K-12 online learning for teachers. The learners described the benefits to teachers as falling into two specific areas: freedom and the capability to customize instruction for their students. One learner felt "that online courses would serve as a way of freedom for teachers. Just like the article states, it gives teachers the ability to design and

deliver a course that will fit the students' learning patterns and interests" (Nancy [all names are pseudonyms]). Another learner agreed with the "flexibility and adaptability of virtual learning" for teachers and also added that it "allow[ed] for faster acknowledgement of change and adaptation of curriculum" (Kristy). These comments displayed the perceived importance of differentiated instruction available within the K-12 online learning environment. With the continued downloading of responsibilities on classroom teachers, virtual schools were also seen as an avenue to effectively provide instruction to each of their students based upon the student's individual need.

However, consistent with many of the demands placed on teachers' time, it is understandable that the data around this particular theme also included some drawbacks for the profession. The learners consistently listed three different reasons why they felt K-12 online learning posed hindrances on teachers: including increased training and more responsibility and preparation time. Six of the learners made 22 comments referring to the need for increased teacher technical training. "Training burnt out teachers" (Barb), also meshes with their thoughts of why they believe K-12 online learning has the potential to fail. Many students "agree[d] that the administrative work would be greater" (Ashley) and that "keeping up in the profession [could] be very difficult, and now virtual schooling comes along" (Bryan). These comments were consistent with other learners who indicated, "there would be a lot more work because of the setup and keeping track of students," (Beneliz) and "technology [was] forcing more responsibility on us all" (Barb). Interestingly, the teachers in the Compton et al. (2007) study also identified issues related to the teaching profession as one of their concerns; those teachers focused upon the misconception that online courses were easier or less demanding. This shifting of focus from ease of completing the course for the students to the demands of teaching the course for the teachers may be due to the fact that teachers in this study were located in the State of Michigan, where the Michigan Virtual School had been in operation for 9 years and the freshmen class that year were the first group of students who would have to take an online learning experience as a part of the state's new graduation requirement. Although it could also be due to the fact that teachers in the Compton et al. (2007) study were preservice teachers.

The second theme focused on how K-12 online learning could affect today's students. The data overwhelmingly focused on the various populations of students that K-12 online learning could benefit, primarily due to the perceived ability of online learning to increase learning and engagement. A variety of populations that could benefit from K-12 online learning were discussed, such as high school and middle school students, dropouts, and alternative education students. The learners also suggested that K-12 online learning "offer[ed] more alternatives for students" (Bryan). Learners also commented on how K-12 online learning provided various entry points for student learning, with more options and choices to learning. "It [is] a great way for students to get the

education they so vitally need,” according to Nancy. The data also indicated learners viewed K-12 online learning in a very positive manner. This theme was quite consistent with the findings of Compton et al. (2007). In this earlier study, learners were of the initial opinion that K-12 online learning was largely for higher ability students; however, after completing the TEGIVS materials, those learners came “to realize that students who were in rural areas and who did not learn well in traditional settings could benefit from virtual schooling” (p. 2973). While the specific populations of students identified by the learners in both studies differed slightly, there was a consistent perception that K-12 online learning could expand educational opportunity.

The negative aspect concerning the various populations of students was the perceived lack of socialization and interaction between the students and instructor in the online environment. This was also a concern for the teachers in the Compton et al. (2007) study, who were particularly concerned with second language learners. This is an area that will need to be addressed for future course offerings. This could be accomplished by providing literature or case studies on the interaction that often occurs between the teacher and students and between students themselves in the online environment. This was consistent with the strategy used by Compton et al. (2007), who were able to address this concern later in their course by having the students explore an exemplary K-12 online learning course.

The third theme was focused on the reasons why K-12 online learning was unsuccessful. These included a lack of K-12 online learning knowledge among stakeholders and lack of or ambivalent administrative support. The data showed that the main reason the learners felt that K-12 online learning was unsuccessful was due to the lack of information provided to teachers, students, parents, and administrators about the possibilities and benefits of this method of delivery. One learner stated, ‘I never ever hear anything at school about virtual schooling. It is not mentioned in workshops or at meetings. I doubt very many teachers are even aware of its possibilities. Or its existence’ (Maggie). Another learner suggested that ‘teachers [are] afraid of the unknown,’ (Penny), and until their perceptions are changed, K-12 online learning will face challenges. Learners also addressed the lack of support by administration as being a main perceived cause for K-12 online learning’s lack of success. This category was consistent with the lack of knowledge about online learning by administrators. It is worth reminding the reader that there were several years between the data collected for this study and the Compton et al. (2007) data. Watson et al. (2012) described how district-based programs are a growing trend within the K-12 online learning field. Further, the K-12 online learning graduation requirement has been in effect in Michigan for the past three graduating classes. These trends within the field might call into question whether both teachers and administrators would continue to have a ‘lack of knowledge’ about K-12 online learning.

The fourth theme that emerged focused on success factors for K-12 online learning. Eight of the nine learners perceived the notion that “without well-trained, qualified teachers to facilitate online instruction, virtual schooling will be ineffective as an educational model” (Kristy). The learners also suggested that K-12 online learning can be successful if all stakeholders were educated on the topic, proper technology was accessible, and students were trained on the technology being used and had access to an on-site coach. This final component is critical, as there is a growing body of research that suggests the inclusion of school-based personnel is directly tied to student success in K-12 online learning environments (de la Varre, Keane, & Irvin, 2011; Irvin, Hannum, Farmer, de la Varre, & Keane, 2009; Pettyjohn, Kennedy, & LaFrance, 2013; Roblyer, Freeman, Stabler, & Schneidmiller, 2007; Watt, 2005).

Year 2 Themes

The analysis of the Year 2 data also identified four main themes. The dominant theme identified in this data focused on the types of students the learners felt could be served by this form of educational delivery. For example, Alison wrote, “I think that K-12 students who participate in online learning are largely in the upper end of the K-12 range. It is difficult for me to see where online learning has a place in K-5 education.” Overall, the learners felt that K-12 online learning could be beneficial for students who were at risk, sick or depressed, shy, gifted, and responsible—in order of the number of times mentioned. The strongest beliefs about who benefited the most from K-12 online learning were reserved for those students who received their education at home. Representative of these comments, Devon wrote, “students drawn to this form of learning are those who find taking courses at home more desirable for a variety of reasons ranging from difficulty attending a classroom, time considerations and even health considerations.” The group of students identified as potentially benefiting from K-12 online learning was fairly consistent with the data collected during the previous Winter semester, with at-risk and students in the middle and high school grades also being identified.

Second, none of the Year 2 learners were able to see a role for K-12 online learning at the elementary grades.

I just don't understand how K-3 students can benefit from learning online. I think they need to be in an instructional setting so that they learn self-control, self-discipline and how to interact with their peers. Once these critical skills are taught, then can they move on up to learning that is done more independently.
(Aida)

It should be noted that in 2009 the cyber charter school legislation had not been approved by the State of Michigan (Van Beek, 2011). As such, there would have

been only minimal online learning at the elementary level occurring in the state at the time these data were collected. This concern about K-12 online learning at the elementary level also emerged with learners in the year one data, which was connected to the socialization and interaction as potential problems for students who did not communicate well in a technology-mediated environment—such as English as a second language students (Compton et al., 2007). Finally, the focus on the nature of students and their ability to succeed in a K-12 online learning environment may have emerged as the main theme in the Year 2 data due to the changes in the instructor’s discussion prompts.

In the year one data, the impact K-12 online learning had on learners was the main theme, which was the third theme from the Year 2 data—with a focus on benefits and drawbacks. Of the benefits listed in the year one data, only one remained consistent with the Year 2 learners; the freedom to access online learning anywhere or anytime. For example, Patty wrote, “I learned that I like the convenience of doing my homework for class or answering blog question at 2:00 a.m. or even getting up at 4:00 a.m. in the morning while still in my PJ’s.” These personal realizations were also translated into opinions that their students could also benefit from the same flexibility. Learners also felt that K-12 online learning provided additional exposure to courses and a world full of resources and content not available at the school. “It really makes the entire world the classroom for the students. It does not have to be confined to the 8 a.m. to 3 p.m. day of school, nor does it need to be in a particular building” (Mason).

Learners felt K-12 online learning removed social pressures such as student acceptance and judgment by other students during adolescents. Aida wrote:

I also feel that online classes help students become more open and show their true personalities. Students are often embarrassed, reserved or simply afraid to make a mistake in a class setting. With online schooling, students do not feel the pressure of needing to impress students around them. They also might be more likely to speak out about certain topics of discussion with other class members more freely because of the lack of peer pressure and boost of confidence the Internet gives to individuals.

Learners also found that K-12 online learning also had the potential to reduce class disruptions and allow the teacher time to better prepare and provide feedback. “I can only imagine how nice it would be to focus on teaching, without all of the many distractions that occur in the classroom” (Alison). Finally, learners indicated K-12 online learning provided current learners exposure to tools that would be used in their future learning and careers. Again Alison wrote, “having an online learning requirement for *all* students will help them be more prepared for their future schooling and even work lives” (emphasis in original).

There were only two drawbacks that emerged in the Year 2 data. The first was the perceived isolation that could develop for students who were engaged in

K-12 online learning outside of a brick-and-mortar setting. Devon wrote that it “might keep the painfully shy student from getting the socialization experiences needed.” There were also some minor references to concerns about cheating, although this was not a dominant theme. Interestingly, neither of these issues were found to be themes in the year one data. Learners from that semester were primarily concerned with the impact K-12 online learning would have on teachers, specifically the potential to increase teacher workload and administrative tasks. Increase in potential workload was mainly seen through the lens of the amount of time it may take to stay current with the technology required for this method of educational delivery. Many of the concerns expressed by the Year 2 learners were more consistent with the findings reported by Compton et al., (2007), when they reported the results of their initial use of the TEGIVS materials with students at ISU. The lack of concern for some of these issues may be due to changes made in IT6230 but could also be related to a growing acceptance and understanding of virtual schooling.

Finally, the fourth theme focused on some key issues that needed to be addressed to allow for the successful integration of virtual schooling into the K-12 system. The first of these was the necessary technical training for teachers and students. “I would look at . . . the instructors training. The knowledge to teach the course is not in question, rather the technological savvy to catch the students that may abuse the freedom” (Mason). Other issues the learners raised included having a high level of interaction between students and teachers, along with ensuring the appropriate technology was in place. Finally, learners felt there needed to be specific policies in place for students related to acceptable use. Mason summarized it best when he wrote,

The “honor code” is often defined prior to the beginning of the class and signed by each student as to the acceptable use of the program and the technology. This helps to give the students some written boundaries and consequences should they choose to violate it.

Again, it must be noted the teachers in year one generated a theme of reasons why K-12 online learning were unsuccessful ([Barbour & Unger, 2009](#)). These learners focused on the role of the teacher and administrators as why virtual schools were often unsuccessful, including the lack of training—which was also found to a limited extent in the Year 2 data. However, absent from the Year 2 data were concerns raised over teacher and administrative buy-in. Again, this could be due to changes made in IT6230, although it is more likely due to the fact that the Michigan online learning graduation requirement was in its second year (thus teachers and administrators had no choice but to buy-in to reality of K-12 online learning). It is interesting to remind readers that the State of Michigan implemented the online learning graduation requirement in 2007. This means that the class of 2011 was the first high school graduates where all students had to

complete an online learning experience. We mention this because the learners in this study, mainly middle and high school teachers, had freshmen and sophomores that would be held to this graduation requirement. Yet, three of the themes still focused on the “who” and “what” of K-12 online learning, as opposed to the effective ways K-12 online learning could be supported in their role as virtual school facilitators. These themes were consistent with the year one data (and fairly consistent with the original implementation finds of Compton et al., 2007).

Overall, learners responded they supported online learning and even indicated they would like to try teaching an online course at some point in the future. This was a change from the previous year, when some remained quite skeptical about the use of or potential for online learning at the K-12 level (Barbour & Unger, 2009). It will be interesting to see if this trend continues with future rounds of data collection. Also of interest was the learners changing attitudes toward K-12 online learning for elementary students. While not raised in the year one semester, the learners in Year 2 did not see a place for K-12 online learning at the elementary level (even though one of the TEGIVS scenarios was focused solely on the elementary setting and a second on the elementary or middle school level).

Implications for Course Design

Based on the data collected from year one (Barbour & Unger, 2009), the main course modification was the change in coverage for the K-12 online learning content from 5 to 7 weeks (with the additional 2 weeks coming from the Web 2.0 coverage). In the open-ended portion of the SETs, the learners reported that the focus on Web 2.0 technologies provided them with knowledge to use those tools; yet, they wanted more content on how to use them to design and deliver K-12 online learning. These comments indicated that the learners did not feel as though the roles of the virtual school designer or virtual school teacher were adequately addressed.

The first modification made to address this issue was a reorganization of the content to follow more closely to the three virtual school teacher roles. In addition, the course readings were rearranged to align them better to these three roles (e.g., Barbour, 2007 and Keeler, 2004 for the virtual school designer)—as well as include a better mix of research-based and practitioner-focused articles. Further, in addition to the TEGIVS scenarios, the use of the Iowa Learning Online case studies was also added as a resource to support the virtual school teacher role. Finally, while the TEGIVS scenarios were again used to explore the role of the virtual school facilitator role, learners were not required to complete the “Notes Sheets” for the individual project—as learners reported in the SETs that they perceived them as “busy work.” Instead, learners completed the tasks for each scenario.

The continued analysis of the Year 2 data allowed for ongoing improvement to IT6230. Based on the Year 2 data, it appeared that the 2-week increase in

coverage allowed for a greater depth of understanding. The main concerns that was raised by learners in the SETs was the fact that the TEGIVS scenarios focused on Iowa and Florida, while the Iowa Online Learning case studies focused exclusively on Iowa. Essentially there was no specific, Michigan-focused content for the virtual school teacher or the virtual school facilitator roles. To begin to address this concern, the instructor secured an internal development grant to create a series of Michigan-focused online teaching case studies (in partnership with Michigan Virtual School).¹ Whether the addition of this content, and other modifications, were effective will be examined as a part of the data collected from the next course offering.

Conclusion and Implications

The year one results demonstrated the learners perceived that K-12 school administrators and other stakeholders were not fully equipped with knowledge about or prepared to support K-12 online learning. The data also indicated that when learners were exposed to information about K-12 online learning through articles, videos, and active discussion with other peers, they were able to see the benefits of K-12 online learning for both teachers and students. The learners appeared eager to begin developing the skills needed to become more active in supporting and implementing online learning at their own schools. The Year 2 results demonstrated many of the same themes but also focused on more of the challenges to K-12 online learning—particularly for specific groups (e.g., elementary students, at-risk students, etc.). The data also showed a decrease with each semester in the number of challenges or obstacles teachers perceived to be associated with online learning, which could be attributed to the Michigan online learning requirement or the increased exposure to K-12 online learning.

It terms of the implications for practice, it is important to note that the purpose of design-based research is to provide guidance specific to those local partners on how to improve the educational initiative that is under study (Design-Based Research Collective, 2003; Reeves, 2006, 2011; [Reeves, McKenney, & Herrington, 2011](#)). In fact, there are some that would argue that qualitative research in general is not designed to be generalizable (Meyers, 2000). In this specific instance, analyzing the learners perceptions at the conclusion of each semester led to local curricular changes at this particular institution with the goal of implementing activities that impacted learners perceptions and knowledge of K-12 online learning. Altering the curriculum led to lessons learned about designing the course. For example, first, learners' preconceptions must be confronted to dispel any myths they have about K-12 online learning. Second, teachers need to be exposed to examples of K-12 online learning. While using the Iowa Online Learning cases proved to be effective for accomplishing this, creating examples that are specific to each state's

requirements may be more beneficial. In addition, the Iowa Online Learning cases were all focused on the supplemental environment, whereas much of the K-12 online learning today occurs in full-time and blended environments—both of which would benefit preservice and in-service teachers. Further, learners' discussions were more meaningful when prompts were tied to the readings, but it was also imperative to push learners to use resources beyond the assigned readings. The individual project needed to continually be altered to reflect the changes in the ever-evolving K-12 online learning environment. Finally, the curricular resources and activities in IT6230 primarily focused on the "virtual school facilitator" role, but future offerings should increase the amount of materials related to the "virtual school designer" role. We can conclude that exposing learners to K-12 online learning through a facilitator's role was a first step in preparing them for the other roles of K-12 online learning.

With respect to suggestions for future research, as a design-based research study, the next iteration of this study should continue to examine whether the K-12 online learning curriculum persists in changing in-service teachers perceptions of K-12 online learning, as well as doing a better job of addressing learners awareness and preparedness for all three teacher roles in the virtual school environment. Further, beyond the confines of this one design-based research study, this type of ongoing, long-term, cyclical investigation could serve as a model for future study into a variety of different topics related to K-12 online learning. In fact, both Barbour (2013) and Barbour and Reeves (2009) have recommended greater use of design-based research in the field of K-12 online learning to improve individual virtual schools, as well as those institutions that prepare the professionals to work in virtual school environments.

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Note

1. See <http://itlab2.coe.wayne.edu/it6230/casestudies/> for the case studies that were developed and incorporated into future offerings of IT6230.

References

- Ambient Insight. (2011). *Learning technology research taxonomy: Research methodology, buyer segmentation, product definitions, and licensing model*. Monroe, WA: Author. Retrieved from http://www.ambientinsight.com/Resources/Documents/AmbientInsight_Learning_Technology_Taxonomy.pdf

- Archambault, L. (2011). The practitioner's perspective on teacher education: Preparing for the K-12 online classroom. *Journal of Technology and Teacher Education*, 19(1), 73–91.
- Archambault, L., DeBruler, K., & Freidhoff, J. (2014). K-12 online and blended teacher licensure: Striking a balance between policy and preparedness. *Journal of Technology and Teacher Education*, 22(1), 83–106.
- Archambault, L., & Kennedy, K. (2014). Teacher preparation for K-12 online and blended learning. In R. Ferdig & K. Kennedy (Eds.), *Handbook of research on K-12 online and blended learning* (pp. 225–244). Pittsburgh, PA: Entertainment Technology Center Press, Carnegie Mellon University. Retrieved from http://press.etc.cmu.edu/files/Handbook-Blended-Learning_Ferdig-Kennedy-etal_web.pdf
- Archambault, L., & Larson, J. (2015). Pioneering the digital age of instruction: Learning from and about K-12 online teachers. *Journal of Online Learning Research*, 1(1), 49–83. Retrieved from <http://www.editlib.org/p/149852/>
- Barbour, M. K., & Adelstein, D. (2013). *Voracious appetite of online teaching: Examining labour issues related to K-12 online learning*. Vancouver, BC: British Columbia Teachers Federation. Retrieved from <http://www.bctf.ca/uploadedFiles/Public/Issues/Technology/VoraciousAppetite.pdf>
- Barbour, M. K. (2012). Models and resources for online teacher preparation and mentoring. In K. M. Kennedy & L. Archambault (Eds.), *Lessons learned in teacher mentoring: Supporting educators in K-12 online learning environments* (pp. 83–102). Vienna, VA: International Association for K-12 Online Learning.
- Barbour, M. K., & Reeves, T. C. (2009). The reality of virtual schools: A review of the literature. *Computers and Education*, 52(2), 402–416.
- Barbour, M. K., & Unger, K. (2009). Challenging teachers' preconceptions, misconceptions, and concerns of virtual schooling. In I. Gibson et al. (Eds.), *Proceedings of the Annual conference of the society for information technology and teacher education* (pp. 785–790). Norfolk, VA: Association for the advancement of computing in education.
- Barbour, M. K., Siko, J., Gross, E., & Waddell, K. (2012). Virtually unprepared: Examining the preparation of K-12 online teachers. In R. Hartshorne, T. Heafner & T. Petty (Eds.), *Teacher education programs and online learning tools: Innovations in teacher preparation* (pp. 60–81). Hershey, PA: IGI Global.
- Barbour, M. K. (2007). Principles of effective web-based content for secondary school students: Teacher and developer perceptions. *Journal of Distance Education*, 21(3), 93–114. Retrieved from <http://www.jofde.ca/index.php/jde/article/view/30>
- Barbour, M. K. (2013). The landscape of K-12 online learning: Examining what is known. In M. G. Moore (Eds.), *Handbook of distance education* (3rd ed.) (pp. 574–593). New York: Routledge.
- Cavanaugh, C., Barbour, M. K., & Clark, T. (2009). Research and practice in K-12 online learning: A review of literature. *International Review of Research in Open and Distance Learning*, 10(1). Retrieved from <http://www.irrodl.org/index.php/irrodl/article/view/607>
- Clark, T. (2001). *Virtual schools: Trends and issues – A study of virtual schools in the United States*. San Francisco, CA: Western Regional Educational Laboratories. Retrieved from http://www.wested.org/online_pubs/virtualschools.pdf
- Compton, L., Follett, J., & Demiraslan, Y. (2007). Challenging preservice teachers' preconceptions, misconceptions, and concerns of virtual schooling: A preliminary

- analysis. In R. Carlsen, K. McFerrin, J. Price, R. Weber & D. A. Willis (Eds.), *Proceedings of the society for information technology and teacher education international conference annual 2007* (pp. 2971–2976). Chesapeake, VA: AACE.
- Davis, N., Demiraslan, Y., & Wortmann, K. (2007a, October). *Preparing to support online learning in K-12*. Paper presented at the Iowa Technology and Education Connection Conference, Des Moines, IA.
- Davis, N., Roblyer, M., Charania, A., Ferdig, R., Harms, C., Compton, L., . . . Cho, M. (2007b). Illustrating the virtual in virtual schooling: Challenges and strategies for creating real tools to prepare virtual teachers. *Internet and Higher Education*, *10*(1), 27–39.
- Davis, N., & Rose, R. (2007). *Professional development for virtual schooling and online learning*. Vienna, VA: North American Council for Online Learning. Retrieved from http://www.inacol.org/wp-content/uploads/2015/02/NACOL_Professional-development-for-virtual-schooling.pdf
- Davis, N. E. (2007, February). *Teacher education goes into virtual schooling*. Paper presented at the FIPSE Comprehensive Conference, Washington, DC. Retrieved from <http://ctl.iastate.edu/~tegivs/TEGIVS/publications/VS%20Symposium2007.pdf>
- Davis, N. E., Niederhauser, D., Compton, L., Lindstrom, D., & Schoeny, Z. (2005, March). *Virtual schooling lab practice: Case studies for teacher preparation*. Paper presented at the Society for Information Technology and Teacher Education International Annual Conference, Phoenix, AZ.
- de la Varre, C., Keane, J., & Irvin, M. J. (2011). Dual perspectives on the contribution of on-site facilitators to teaching presence in a blended learning environment. *The Journal of Distance Education*, *25*(3). Retrieved from <http://www.jofde.ca/index.php/jde/article/view/751/1285>
- Design-Based Research Collective. (2003). Design-based research: An emerging paradigm for educational inquiry. *Educational Researcher*, *32*(1), 5–8.
- Emerson, R. M., Fetz, R. I., & Shaw, L. L. (1995). *Writing ethnographic fieldnotes*. Chicago, IL: University of Chicago Press.
- Ezzy, D. (2002). *Qualitative analysis: Practice and innovation*. London, England: Routledge.
- Harms, C. M., Niederhauser, D. S., Davis, N., Roblyer, M. D., & Gilbert, S. B. (2006). Educating educators for virtual schooling: Communicating roles and responsibilities. *Journal of Communication*, *16*(1 & 2), 17–24.
- Irvin, M. J., Hannum, W. H., Farmer, T. W., de la Varre, C., & Keane, J. (2009). Supporting online learning for advanced placement students in small rural schools: Conceptual foundations and intervention components of the Facilitator Preparation Program. *The Rural Educator*, *31*(1), 29–36.
- Keeler, C. (2004, April). *Assessment in online environments: A cross-school description of secondary courses*. Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. Retrieved from <http://web.archive.org/web/20111029070619/http://coe.nevada.edu/ckeeler/Papers/AssessmentPresentation.ppt>
- Kennedy, K., & Archambault, L. M. (2012a). Offering pre-service teachers field experiences in K-12 online learning: A national survey of teacher education programs. *Journal of Teacher Education*, *63*(3), 185–200.
- Kennedy, K., & Archambault, L. (2012b). *Lessons learned in teacher mentoring: Supporting educators in K-12 online learning environments*. Vienna, VA: International Association for K-12 Online Learning.

- Kennedy, K., & Archambault, L. (2012c). Design and development of field experiences in K-12 online learning environments. *Journal of Applied Instructional Design*, 2(1), 35–49.
- Kennedy, K., & Archambault, L. (2013). *Partnering for success: A 21st century model for teacher preparation*. Vienna, VA: International Association for K-12 Online Learning.
- LeCompte, M. D., & Preissle, J. (1993). *Ethnography and qualitative design in educational research* (2nd ed.). San Diego, CA: Academic Press.
- Meyers, M. (2000). Qualitative research and the generalizability question: Standing firm with proteus. *The Qualitative Report*, 4(3/4). Retrieved from <http://www.nova.edu/ssss/QR/QR4-3/myers.html>
- Molnar, A., Rice, J. K., Huerta, L., Shafer, S. R., Barbour, M. K., Miron, G., . . . Horvitz, B. (2014). *Virtual schools in the U.S. 2014: Politics, performance, policy, and research evidence*. Boulder, CO: National Education Policy Center. Retrieved from <http://nepc.colorado.edu/publication/virtual-schools-annual-2014>
- Pettyjohn, T., Kennedy, K., & LaFrance, J. (2013). Supporting students in supplemental online learning for credit recovery. In R. McBride & M. Searson (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference* (pp. 4141–4146). Chesapeake, VA: AACE.
- Pidgeon, N., & Henwood, K. (2004). Grounded theory. In M. Hardy & A. Bryman (Eds.), *Handbook of data analysis* (pp. 625–648). London, England: Sage.
- Putnam, R. T., & Borko, H. (2000). What do new views of knowledge and thinking have to say about research on teacher learning? *Educational Researcher*, 29(1), 4–15.
- Reeves, T. C. (2006). Design research from the technology perspective. In J. V. Akker, K. Gravemeijer, S. McKenney & N. Nieveen (Eds.), *Educational design research* (pp. 86–109). London, England: Routledge.
- Reeves, T. C. (2011). Can educational research be both rigorous and relevant? *Educational Designer*, 1(4) Retrieved from <http://www.educationaldesigner.org/ed/volume1/issue4/article13/>
- Reeves, T. C., McKenney, S., & Herrington, J. (2011). Publishing and perishing: The critical importance of educational design research. *Australasian Journal of Educational Technology*, 27(1), 55–65.
- Rice, K. L., & Dawley, L. (2007). *Going virtual! The status of professional development for K-12 online teachers*. Boise, ID: Boise State University Retrieved from <http://edtech.boisestate.edu/goingvirtual/goingvirtual1.pdf>
- Roblyer, M. D., Freeman, J., Stabler, M., & Schneidmiller, J. (2007). *External evaluation of the Alabama ACCESS initiative: Phase 3 report*. Eugene, OR: International Society for Technology in Education. Retrieved from <http://accessdl.state.al.us/2006Evaluation.pdf>
- Ruona, W. E. A. (2005). Analyzing qualitative data. In R. A. Swanson & E. F. HoldtonIII (Eds.), *Research in organizations: Foundations and methods of inquiry* (pp. 233–263). San Francisco, CA: Berrett-Koehler Publishers, Inc.
- Smith, R., Clark, T., & Blomeyer, R. L. (2005). *A synthesis of new research on K-12 online learning*. Naperville, IL: Learning Point Associates Retrieved from http://www.riversidevirtuallschool.net/RVS/Website/Publications/Online%20Teaching%20and%20Learning/A_Synthesis_on_New_Research_on_K-12_Online_Learning.pdf
- Strauss, A. L., & Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedures and techniques* (2nd ed.). Newbury Park, CA: Sage.

- Van Beek, M. (2011). *Virtual learning in Michigan schools*. Midland, MI: Mackinac Center for Public Policy. Retrieved from <http://www.mackinac.org/archives/2011/s2011-01-VirtualLearningFINAL.pdf>
- Watson, J., Murin, A., Vashaw, L., Gemin, B., & Rapp, C. (2012). *Keeping pace with K-12 online learning: An annual review of state-level policy and practice*. Evergreen, CO: Evergreen Education Group. Retrieved from <http://kpk12.com/cms/wp-content/uploads/KeepingPace2012.pdf>
- Watt, D. (2005). *Community-based learning opportunities for aboriginals, winner, 2005: The sunchild e-learning community model*. Ottawa, ON: Conference Board of Canada. Retrieved from <http://sso.conferenceboard.ca/documents.aspx?DID=1457>
- Yang, D., & Rice, K. (2015). [Boise State's journey to a k-12 online teaching endorsement program](#). In T. Clark & M. K. Barbour (Eds.), *Online, blended and distance education in schools: Building successful programs* (pp. 104–118). Richmond, VA: Stylus Publishing.

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