

## **Primary and Secondary Teacher Preparation for Designing, Delivering and Supporting Online Learning**

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In a recent report on the state of online learning at the primary and secondary level around the world, the International Association for K-12 Online Learning (iNACOL) defined online as “education in which instruction and content are delivered primarily via the Internet” and blended learning as “learning that combines two modes of instruction, online and face-to-face, but at potentially different points in time” (Barbour, Brown, Hasler Waters, Hoey, Hunt, Kennedy, Ounsworth, Powell & Trimm, 2011, p. 5). Within the North American context, primary and secondary online and blended learning is growing at an exponential rate. For example, Clark (2001) estimated there were between 40,000-50,000 primary and secondary students enrolled in one or more distance education course during the 2000-01 school year. A decade later, Ambient Insights (2011) indicated that there were approximately four million primary and secondary students enrolled in online learning courses. Similarly, during 1999-2000 school year the Canadian Teachers Federation (2000) estimated there were approximately 25,000 primary and secondary students enrolled in one of more distance education courses. Ten years later, Barbour (2011) reported that there were approximately 182,096 primary and secondary students enrolled in one or more distance education courses during the 2009-10 school year.

Outside of North America the development of K-12 online learning is much more sporadic. In the introduction to their 2006 worldwide survey of departments of education, the North American Council for Online Learning (NACOL) indicated that “research has been done on several virtual schools in North America; however, little information is available about current K-12 e-learning initiatives across the world” (Powell & Patrick, 2006, ¶ 1). Today, five years later the same statement is still applicable. There have been isolated exceptions. For example, Demiray & Adiyaman (2002) provided a comprehensive history of the open high school program in Turkey, while Powell and Patrick (2006) described that country’s more recent “Online Big Project” initiative that was designed to digitize all of the open high school’s curriculum (although to date that has largely meant converting the correspondence materials into PDF format).

In another example, Barbour (2010) outlined a series of “Master Plans” issued by the Government of South Korea that led to the development and significant usage of the Cyber Home Learning System. A third example is Powell and Barbour (2011), who described the role of the Government of New Zealand and specific visionary documents that have facilitated the creation and growth of the Virtual Learning Network – a regional secondary online learning programs that has been developing since 1996. Further, iNACOL recently released a follow-up to their initial worldwide survey that included responses from 50 countries (Barbour et al., 2011) and also in depth case studies on 11 of those countries (Barbour, Hasler Waters & Hunt, 2011). Finally, Barbour and Kennedy (in press) will outline the K-12 distance education activity in Australia, Canada, Mexico, New Zealand, Singapore, South Korea, and Turkey. The fact that I am able to list almost all of these individual projects indicates how accurate Powell and Patrick’s (2006) statement that “little information is available about current K-12 e-learning initiatives across the world” remains.

However, in a survey of primary and secondary online teachers in the United States, Rice and Dawley (2009) found that less than 40% reported receiving professional development before they began teaching online. The authors also reported that the vast majority of those who received professional development indicated it was from the virtual school, and not their university-based, teacher preparation programs. This indicates a need for teacher education programs to address pre-service and in-service teachers' ability to teach in environments that are completely mediated by technology.

### **University Programs to Prepare Primary and Secondary Online Teachers**

To date, universities have had a very limited role in the preparation of teachers for this educational medium. At present, few universities offer a course in online pedagogy and even fewer teachers have the ability to complete student teaching in an online environment. Some universities have introduced certificates in online teaching, but rarely do these programs have a K-12 focus. Simply put, beyond isolated examples, universities have relegated the preparation of teachers to be able to design online courses, teach in an online environment, and support students at their own school engaged in online learning to the programs that offer these opportunities.

The lack of university involvement is coupled with a general lack of research into virtual schooling. Barbour and Reeves (2009) wrote that “there [had] been a deficit of rigorous reviews of the literature related to virtual schools” (p. 402). Further, Rice (2006) described a paucity of research into virtual schooling, while Cavanaugh, Barbour and Clark (2009) reported practice of virtual schooling is out-pacing the availability of research that might guide practitioners and those responsible for preparing them.

One of the few systematic programs of research has been conducted by Niki Davis and her team at Iowa State University as a part of their federally-funded "Teacher Education Goes Into Virtual Schooling" (TEGIVS) project<sup>1</sup>. One of the advancements made by the TEGIVS researchers was the delineation of three individual teacher roles that go into the virtual school teaching interaction (see Table 1).

*Table 1. Teacher roles in the K-12 online learning environment (Davis, 2007)*

Virtual School Teacher Roles	Virtual School Teacher Responsibilities
Designer	Design instructional materials. Works in team with teachers and a virtual school to construct the online course, etc.
Teacher	Presents activities, manages pacing, rigor, etc.. Interacts with students and their facilitators. Undertakes assessment, grading, etc.
Facilitator	Local mentor and advocate for students(s). Proctors & records grades, etc.

The TEGIVS project introduced and oriented pre-service teachers (i.e., undergraduate students) to these three roles, although the curricular materials they developed did focus more

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<sup>1</sup> See <http://www.public.iastate.edu/~vschool/TEGIVS/homepage.html>

on the role of virtual school site facilitator (also referred to as a mentor teacher, mediating teacher or learning coach in the literature).

More recently, as a part of a special issue focused on K-12 online learning of the *Journal of Technology and Teacher Education*, Ferdig, Cavanaugh, DiPietro, Black and Dawson (2009) provided a more extensive delineation of the different roles that teachers might undertake in the K-12 online learning environment (see Table 2).

Table 2. Teacher roles in the K-12 online learning environment (Ferdig et al., 2009)

Virtual School Teacher Roles	Virtual School Teacher Responsibilities
Instructional Designer	The creator of the online course in accordance with content standards using effective strategies for the learners and the content
Teacher	The educator with primary responsibility for student instruction within an online course including interaction with students and assigning course grades
Online Facilitator	The person who supports students in a virtual school program. The facilitator may interact with students online or may facilitate at the physical site where students access their online course.
Local Key Contact	The professional who assists students in registering and otherwise accessing virtual courses
Mentor	The academic tutor or course assistant for students
Technology Coordinator	The person who facilitates technical support for educators and students
Guidance Counselor	The academic advisor for students
Administrator	The instructional leader of the virtual school

While the Ferdig et al. (2009) is by far the more developed of the two classifications, at present the Davis (2007) classification is the dominant one used in the literature.

### Research into Online Teacher Roles to Guide University Programs

There are only a handful of studies that have examined the design, delivery and support of K-12 online learning, most with methodological limitations. For example, DiPietro et al. (2008) reported best practices in asynchronous teaching based upon the perceptions of online teachers at a single virtual school. These self-reports were not validated through observation of the teaching or student performance. Similarly, Murphy and her colleagues have conducted studies of online teaching with another virtual school that has been limited to only teachers' observations of synchronous instruction (Murphy & Coffin, 2003), or interviews without other methods of data collection to triangulate the findings (Murphy & Rodríguez Manzanares, 2009a; 2009b; Murphy, Rodríguez-Manzanares, & Barbour, 2011). These studies are examples where results are limited to online teachers' opinions or actions, and cannot be generalized to a larger K-12 online learning community.

The available research into online course design at the K-12 level has similar limitations. Barbour and Cooze (see Barbour, 2005; 2007; Barbour & Cooze, 2004; Cooze & Barbour, 2007) examined what constituted effective asynchronous course content design for K-12 learners by using interviews with teachers and course developers at a single virtual school, with little input from students or verification of the interviewees' perceived

effectiveness. Keeler and Anderson-Inman began the process of creating a validated instrument to describe online course design within the K-12 environment (Keeler, 2004; 2006; Keeler & Anderson-Inman, 2004a; 2004b). However, their instrument was limited to description of the online course, and failed to account for the quality of those courses. More research is needed in order to develop a reliable and valid way to measure the quality of the design and delivery of virtual schooling.

Of the three roles, the role of facilitators or mentor teacher has received the least amount of research. Based on surveys with five mediating teachers in a single province-wide virtual school, Barbour and Mulcahy (2004) found mediating teachers provided significant amounts of support in a wide range of areas. Five year later, Barbour and Mulcahy (2009) reported the time these mediating teachers spent supporting online learning at their school had actually increased. However, there were no observations to actually determine if the self-reports of these mediating teachers actually represented the kinds of activities they engaged in or the amount of time it took. Further, Roblyer, Freeman, Stabler, and Schneidmiller (2007) found that school-based teachers “directly working with students day by day [were] key to the success of the [K-12 online learning] program” (p. 11). This was also based on the self-report of the school-based facilitators at a single state-wide virtual school. In one of the few large-scale empirical studies that have been conducted in any of these three virtual school teacher roles has been conducted by the University of North Carolina at Chapel Hill. Irvin, Hannum, Farmer, de la Varre and Keane (2009) designed the EROL-English intervention, which went beyond current “business-as-usual” facilitator training focused on the logistics of K-12 online learning. In a cluster-randomized trial, Hannum, Irvin, Lei and Farmer (2008) reported that facilitators who received the training had a 70% course completion rate, which was significantly higher than the 41% completion rate for students in the control condition where facilitators received the “business as usual” training.

## Conclusions

This session was designed to describe the growth of K-12 online learning, explore the new roles that teachers must assume when they are involved in or have students enrolled in virtual school, and examine the research that might guide the development of teacher training initiatives. At present, the practice of K-12 online learning – throughout the world – is growing much faster than the availability of reliable and valid research. One of the things that is known is that the role of the teacher has shifted. In the classroom environment, the teacher is often the sole designer, delivering and supporter of the instruction. However, in the online environment the distance between the instruction and the student often means that the design, delivery and support of K-12 students in the online classroom are done by different individuals. The difficulty at this stage of the development of K-12 online learning is that there are few university-based programs designed to prepare teachers for any of these roles, and even if universities wanted to venture into this realm, there is little in the way of empirical research to assist them in the design of such programs.

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