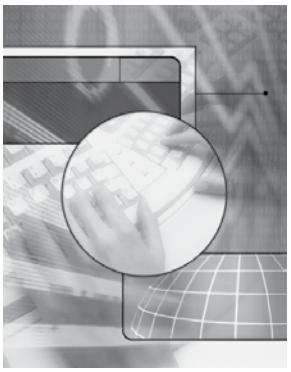

"Teaching Online Made Me a Better Teacher": Studying the Impact of Virtual Course Experiences on Teachers' Face-to-Face Practice

M. D. Roblyer, Marclyn Porter, Talbot Bielefeldt, and Martha B. Donaldson

Abstract

Anecdotal accounts from teachers have long suggested the possibility that virtual teaching experiences have a positive impact on face-to-face teaching practices, a so-called "reverse impact" phenomenon. Survey and focus group data collected as part of a statewide evaluation of a virtual school offered an opportunity to explore this impact. Findings from a study of teacher perceptions indicate that three quarters of teachers who teach in both virtual and traditional environments felt that virtual experiences improved their practice in face-to-face classrooms. The authors discuss three types of impact reflected in teacher comments and discuss tentative implications for teacher preparation programs and for bolstering the rationale for using technology in education. (Keywords: distance edcuation, online learning, virtual schools)

Benefits of Virtual Schooling: Current and Proposed

The popularity of virtual schooling, "instruction in which (K–12) students and teachers are separated by time and/or location and interact via computers and/or telecommunications technologies" (National Forum on Education Statistics, 2006, p.1), continues to be a success story unique in the evolution of educational technology. Although adoption of technologies in K–12 school classrooms has traditionally been slow and sporadic (Cuban, Kilpatrick, & Peck, 2001; Norris, Sullivan, & Poirot, 2003) and benefits have often been difficult to document, virtual schooling has seen steady acceptance and growth since its beginning in 1997, and the resulting impact on U.S. education can easily be described as transformational.

As of September 2007, 42 states sponsored "significant supplemental online learning programs, significant full-time programs, or both" (Watson & Ryan, 2007, p. 18). Other states are in the planning stages for their own virtual school offerings. The latest National Center for Education Statistics report on virtual schools (Zandberg & Lewis, 2008) found that in 2004–2005, there were an estimated 506,950 technology-based distance education course enrollments in public school districts.

Benefits both documented and perceived have fed the growth of virtual schooling. The virtual schooling movement was founded on the egalitarian principle of providing access to educational opportunities not locally available, and indeed recent virtual school evaluations confirm greatly increased access for these and other populations (Florida TaxWatch, 2007; Roblyer, Freeman, Mason, & Schneidmiller, 2007; Watson & Ryan, 2007). Other documented benefits include passing rates of 5–19% higher than traditional programs on key outcome tests such as Advanced Placement (AP) exams (Smith, Clark, & Blomeyer, 2005, p.15) and higher achieved grades in comparison to traditional course delivery for some content areas (Florida TaxWatch, 2007). Recent economic pressures have given new import to the benefits of convenience and savings in travel costs that virtual schools offer. And recent accounts from virtual teachers offer the possibility of yet another kind of benefit that was the focus of the study reported here: a so-called "reverse impact" phenomenon in which virtual school teaching enhances face-to-face (FTF) classroom practices.

Background and Study Rationale

The unique potential of online environments to benefit teaching and learning has been the subject of much discussion in distance learning literature (Benson, 2003; Gallini & Barron, 2001–2002; Tallent-Runnels, et al., 2006). For example, Tallent-Runnels et al. reviewed findings suggesting that "in asynchronous discussions, students had more time to think about their discussions … (which) improved the depth and quality of responses" (p. 96), and that the "online environment may offer a unique social advantage as compared to the traditional classroom" (p. 97). Gallini & Barron (2001–2002) found that nearly all of the 153 online students they surveyed reported increased communication with instructors (88%) and other students (97%) compared to their traditional course experiences.

Rice (2006) found that online teaching strategies make best use of the unique potential of the online environment when they are highly interactive and based on a constructivist model that encourages students to be active, independent learners. In a meta-analysis comparing achievement, attitudes, and retention between FTF and distance courses, Bernard et al. (2004) found that active learning (problem-based formats with collaboration among students) fostered better achievement and attitudes, though only in asynchronous (e.g., Web-based) formats.

Treacy (2007) described several key differences between FTF and online teaching that helped inform training of online high school teachers who were to teach in virtual school programs. She observed that it was useful to point out to teachers that realizing the benefits of online teaching formats meant they must modify all of the following:

- How curriculum is organized and delivered. This includes methods for presenting content and providing clear expectations for student participation, products, and pacing so students can work on their own
- Social dynamics. They must learn to write discussion prompts and create effective ways of facilitating online discussions and supporting student engagement.
- Assessment strategies. Online formats allow many ways to demonstrate learning, including reflective participation in the online discussion and formative feedback from the instructor.

Transfer of practices learned in virtual environments to traditional classrooms have been reported anecdotally for some time. An early

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evaluation of the Virtual High School, Inc. (VHS), reported that "… teachers indicated that they were using new teaching or assessment approaches in their other courses (year 2, 61%; year 1, 55%). Both principals (62%) and superintendents (68%) also said that teachers used new teaching and assessment approaches in other courses" (Espinoza, Dove, Zucker, & Kozma, 1999, p. 26). Similar kinds of impact are the subject of informal conversations at virtual school conferences and meetings.

One study on this phenomenon was reported by Lowes (2005), who considered the question as part of a larger study of teacher design and teaching practices at VHS, the same large virtual school that had been the subject of the 1999 evaluation by Espinoza, Dove, Zucker, and Kozma. Lowes first interviewed six VHS teachers to create questions for an extensive online survey. Two items in a large battery of questions focused specifically on the pedagogical impact on FTF teaching strategies, asking teachers to select from 40 teaching practices they felt had changed as a result of virtual teaching experiences. Additionally, the survey asked four open-ended questions that focused on types of instructional changes.

Lowes (2005) found that three quarters of teachers who taught in both virtual and FTF courses reported that their virtual experiences had a positive impact on their in-person teaching strategies. When asked to rate on a scale of 1 to 5 (1 = no changes, 5 = major changes) each of the 40 possible revisions to teaching strategies, teachers tended to give higher ratings to adding peer reviews, eliminating poorly designed lessons, redesigning lessons or adding new ones, and providing more detailed instructions. In response to the open-ended questions, some teachers also indicated using more strategies for increasing class participation, requiring more independent learning, using questioning techniques, and encouraging greater metacognition and reflection.

A statewide evaluation of a virtual school system offered an opportunity to further explore this kind of transfer and to add to our knowledge of the types of impact, both pedagogical and other, that teachers perceive. As with personnel at other virtual schools, directors of this program had heard comments from their teachers about the beneficial effects of virtual teaching on in-person classroom teaching and asked that this issue be included in the evaluation. The authors used a computer-aided qualitative approach to gauge the extent to which the phenomenon reported by Espinoza, Dove, Zucker, and Kozma (1999) and Lowes (2005) occurred in other virtual school settings. We also designed the study to allow the possibility of other types of perceived impact in addition to that of improved teaching strategies, as reported in past studies. We included open-ended questions with this focus in the online surveys and in-person focus group interviews planned for the evaluation.

Methodology

Study Participants

The teachers included in the study were 65 attendees at a state-sponsored educational technology conference who were also attending required training for the state's virtual school instructors. Attendees constituted almost half of the program's 147 virtual teachers who were active in the virtual school program at that time. As with most statewide virtual schools, all the teachers working for this state's virtual school program are state certified in the content area in which they teach. About 90% of the program's instructors are full-time teachers in the state's "brick and mortar" schools in addition to teaching one or more courses in online or video-based formats.

Study Setting

The virtual school program itself is a relatively new one. It began offering state-sponsored virtual courses in 2005, but as of the summer of 2008, it already had 170 schools sponsoring virtual courses, which constitutes about 44% of the high schools in the state. The program offers more than 70 courses in a variety of content areas and grade levels, either through an interactive video conferencing (IVC) system that the state put into place at selected schools or via a Web-based course management system (CMS). When resources can be put into place to allow it, the ultimate goal of the program is for all courses to have a blended approach using a combination of these platforms. Some Web-based or blended courses currently use collaborative tools such as Elluminate to promote greater interaction.

Study Procedures

In light of the dramatic differences in virtual program maturity, pedagogical methodologies, types of teacher training, and virtual teaching experience, the researchers decided to use a more open-ended approach to data collection than the one in Lowes' 2005 study. Rather than using a pregenerated set of types of impact, we generated an ethnographic account of teacher beliefs and perceptions in this area through a two-stage approach to qualitative data collection: online surveys followed by in-person focus groups. This two-stage approach allowed for initial analysis that could be further explicated in data from subsequent conversations in order to better provide a thick description of teacher perceptions (Berg, 2007).

Teachers attended a series of training sessions aimed at expanding proficiency with the state's virtual program technologies and procedures. At the beginning of each session, teacher attendees were invited to complete an online version of five question sets (see Appendix), implemented through an account with a commercial online testing and survey system. One set of questions focused on the possibility of "reverse impact" by asking teachers to address the questions: "Has your experience teaching at a distance affected your traditional classroom teaching? If so, in what ways has your traditional teaching been affected?" Computers were available for each teacher to complete an individual survey, and we received responses from 52 of the teachers in attendance, for an 80% return among attendees. Teachers who did not complete surveys were new to the virtual school system and indicated they did not have sufficient experience to provide feedback.

The following day, evaluators held a series of eight focus groups with a total of 28 teachers in rooms allocated by the state department for this purpose. Focus group members had also completed the online surveys, so teachers were encouraged to expand on initial comments and offer a richer explanation of their perceptions than that provided on surveys. Although some of the survey observations were especially informative, most tended to be brief and offered few details to supplement a "yes/no" confirmation. Thus, focus groups yielded additional helpful information. Focus group proceedings were recorded, and evaluators took extensive summary notes to allow for later interpretive analysis (Berg, 2007).

Analysis Procedures

The authors first reviewed responses for evidence that would gauge the extent of the perceived impact and analyzed them subsequently to identify specific types of impact. To establish patterns in teacher data, we subjected survey responses to content analysis using a constant comparative procedure (Dye, Schatz, Rosenberg, & Coleman, 2000; Lincoln & Guba, 1985; Patton, 2002). Two different coders viewed results separately, and each generated an analysis on the categories of perceived impact. They compared their analyses and came to agreement on general findings, ways to resolve discrepancies, and how to characterize results as to categories.

Findings: Perceived Impact of Online Experience on FTF Teaching

Overview

A straightforward count and analysis of survey responses enabled a conclusion about the extent of the perceived impact within this group of teachers.

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Three quarters of the group surveyed (39 teachers, or 75% of the sample) volunteered that they believed virtual teaching did have a positive impact on their in-person instruction, results identical to those found by Lowes (2005). Six teachers said they could draw no conclusions because they no longer teach face to face, three others indicated they lacked sufficient experience with virtual teaching to draw a conclusion, and the remaining four did not respond, which may be interpreted as a negative response. As expected, focus group members mentioned the same kinds of impact, though more teachers gave additional details on types of impact.

An interpretive analysis of survey and focus group responses from the teachers who perceived online teaching had an impact on traditional classroom teaching led to the discovery of three categories of impact: increased use/integration of technologies into traditional teaching (mentioned by 50% of teachers in survey); more effective, student-focused teaching methods and techniques (mentioned by 50% of teachers in survey); and increased empathy and communication with students (mentioned by 10% of teachers in survey). (Categories do not add up to 100% because some teachers expressed more than one perceived impact.) Typical comments from surveys and focus groups are given under each of the categories described here.

Impact Type #1: Increased Technology Use and Integration into Instruction

The first mentioned impact in all focus groups was always increased uses of technology and technology-integrated lessons in the in-person classrooms, in large part because teachers became more aware of electronic resources and how to use them and gained an increased comfort level with them. One teacher indicated, "Practically speaking, I have had to become more technologically savvy, which has been a definite benefit because I learned to use the Elmo, DLP projector, etc., in my regular classroom. I enjoy using some of the online course resources and assessments in my regular classroom. My regular classroom students enjoy hearing that I teach online, and fairly often I will project some of the content from Desire to Learn (D2L, the course management system) onto my regular classroom screen."

A foreign language teacher noted, "I am more actively considering opportunities to incorporate student-centered technology into my traditional course. Electronic submission of assignments and using Wimba (a digital voice application) for speaking opportunities in the foreign language classroom increases the efficiency of my traditional classroom activities. I knew these options were available, but I had not pushed myself to incorporate them. Now I realize how valuable they are and I am more excited about using them."

Several said that they now use the online course management system resources (in this case, D2L, which had been put into place for distant students) with both distant and on-site students. One said, "My kids take all their quizzes and tests online now." Others reported realizing the motivating influences of certain technologies. "My in-class kids fell in love with Elluminate [an online collaboration tool]," said one teacher. "After-school [Elluminate] tutoring for the 'D2L kids' became very popular with my on-site kids. They'd show up whenever they knew one was scheduled."

Some offered a more nuanced view of motivation for increased technology use. One teacher said, "I began to use technologies in my face-to-face classes that became available because of the [virtual] program; I found I had the courage to do that because of the [virtual] program."

Impact Type #2: More Effective Teaching Strategies

Many teacher comments focused on the impact that virtual teaching had on the teaching strategies they used in their in-person classrooms. Types of impact on teaching methods and procedures ranged from gaining ideas for lessons to more ways to get students engaged with content. Some comments were general: "Teaching with [the virtual program] has made me better and stronger in the classroom." Others focused specifically on improved teaching strategies: "Some things [in my in-person class] I think are better now. [For example,] when I finally had laptops for all my virtual students, I also got them for my face-to-face students. I had the students do French e-mails to each other and create PowerPoint [reports] together using Internet resources. The two sites [FTF and online] would often chat together." Student engagement and motivation was another theme. One teacher commented, "As a teacher I am learning so much in terms of using various technologies … I have so many more ideas on how to engage and encourage both my face-to-face and online students … the impact has been so positive."

Changes in teaching strategies were evident in comments such as, "I tend to do a lot more reviewing now. When I taught my [online] precalculus class, I needed to know what they had covered and what they knew, so I was always asking, 'Do you know this, do you know that?' And they would say they didn't, so I'd review it. [When I did this in my on-site class,] my kids seemed to do better than in the previous year, and it was probably because of that."

Impact Type #3: Better Communications and Empathy with Students

Though not mentioned as frequently as the other two categories, comments related to improved communications and relationships with students constituted a third, and perhaps most interesting, theme. More attention to articulation of student communications and to providing clear directions was one aspect of this theme. Example comments were: "I started paying more attention with how I worded things. In my FTF class, I became comfortable because I knew all of the kids, but online, it requires more detailed explanation," and "I am much more specific in my assignments now and I have a better understanding of how much body language plays a part in my teaching." Another said, "Teaching at a distance, I found often the simplest appearing instructions reflect a daunting task to a student sometimes. Clarification is the key, and I clarify often." Still another said, "I think I am better able to explain concepts to my 'live' students because I had to be able to explain through words alone with my Web-based students."

One teacher noted that communications between her and her students improved because of her increased use of technologies for communications, observing, "When kids can send you an e-mail and don't have to say it in the room and perhaps be embarrassed, it is easier for them to say what they want to say. It has improved the way they communicate with me."

Finally, a few teachers noted a new empathy with students. One said, "I have been able to see learning more from the student's viewpoint." Another observed, "It has increased my diversity, flexibility, and compassion for students!" One teacher offered, "I have learned to develop relationships with [virtual] students on their terms, and I try to take that understanding with me in the traditional classroom." One said she had become more flexible and understanding about assignment deadlines and requirements: "I am more sensitive to my students' needs concerning [how long it takes them when] understanding concepts and assignments." This more flexible, understanding attitude toward students is provocative in that it represents an additional, extra-instructional type of impact not mentioned in previous studies.

Conclusions and Implications

The results of the current study offer further tentative evidence of the long-rumored and little-researched influence of online experiences on teachers' perspectives and practice. Though based on only one state's virtual school experiences, reports from this study illustrate that using technology in meaningful ways in the context of virtual courses provided the teacher

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users with compelling evidence of the utility and impact of technology-enhanced methods and made them more likely to try the same and other technologies in their regular classrooms. Virtual course experiences also encouraged teachers to reflect on their teaching and communication strategies with students and work to develop more effective methods and procedures for their in-person classes. Another interesting finding from this study was the realization of a new empathy and sensitivity to student needs, a willingness to relate to all students, virtual and FTF, on their own terms. These findings, especially if confirmed by additional research in other virtual school settings, have implications for teacher preparation and for building a rationale to emphasize training in and use of online technologies. If they are to take advantage of the unique and powerful capacity of these technologies to encourage reflection and build stronger connections between students and instructors, teachers must be taught how to design online activities in ways recommended by Rice (2006), Treacy (2007), and others.

Implications for Teacher Preparation in Virtual Methods

The growing influence of virtual schooling in the U.S. and the acknowledged methodological differences between virtual and FTF teaching have already been great enough to spark interest in including it as an area of emphasis in teacher preparation programs (Davis & Roblyer, 2005; Davis, et al., 2006; Harms, Niederhauser, Davis, Roblyer, Gilbert, 2006). The potential for more pervasive, reform-minded impact on educational quality seems to bolster this interest (Watson & Ryan, 2007). Findings such as those from the current study offer yet another compelling reason for including virtual teaching methods and experiences as a required competency area in teacher preparation programs. Virtual clinical experiences and internships may give preservice teachers more than job skills in an area of burgeoning interest to potential school employers. These experiences may have the effect of illustrating in the most compelling way possible how useful and powerful technologies can be in reaching out and engaging students with diverse needs and abilities.

Implications for Building a Rationale for Technology Emphasis

Building a rationale for technology use in K–12 classrooms has traditionally been problematic, in part because of the lack of a strong research base on pedagogical benefits, and in part due to a school and teacher culture resistant to "disruptive" innovative methods (Christiansen, 2008; Cuban, Kilpatrick, & Peck, 2001; Roblyer & Knezek, 2003). However, the adoption of technologies by individual educators may become less important as some states and school systems, recognizing the social and economic benefits of these technologies, decide to require them on a system-wide basis. For example, state-level decision makers in at least two states (Alabama and Michigan), recognizing the need for students to become more literate in the skill set and habits required for effective virtual learning, have passed new graduation requirements for students to take an online experience or course (Alabama Department of Education, 2008; Michigan first to mandate online learning, 2006). This trend, in combination with the increasing national popularity of virtual schooling as a way to give underserved students access to educational opportunities that are not otherwise available (Watson & Ryan, 2007), seems likely to drive the need for teacher education programs and faculty capable of preparing an increasing number of teachers who are "online instruction literate." The results of the current study indicate that, although use of educational technologies may be increasing due to social and economic reasons, this increased use has the effect of demonstrating the pedagogical benefits of these technologies and their unique role in informing better teaching practice.

Limitations of the Study

Though results from the study are intriguing, it should be noted that findings from early, small-scale studies such as this one must be viewed as preliminary. In light of the dramatic differences in teacher training and instructional practice among virtual school programs, it may be that this two-way flow of information from one delivery format to another, as well as the specific types of impact observed here, are more common in some programs than others. The numbers in the current study also clearly limit both the overall conclusions we are able to make and their generalizability to other programs. Further studies are needed to confirm the phenomenon itself, to clarify what types of impact can be expected to occur in various kinds of environments, and to explain why this impact occurs.

Implications for the Future

Findings such as those from the current study offer good directions for further research on virtual teaching benefits, as well as a vantage point for viewing the emerging future of both technologies in education and, most intriguing, of education itself. If further research shows the results reflected in this study to be widespread, and these benefits can be translated into areas of new emphasis for teacher education programs, the benefits of virtual schooling may extend far beyond redefining what it means to be "in school" and help define what it means to be an effective teacher.

By navigating the unfamiliar, challenging, and changeable terrain of virtual learning, teachers can travel beyond their past teaching and learning experiences and view their teaching practices with fresh eyes. Participating in this novel teaching environment, so different in many ways from the traditional classrooms they have known, could give them opportunities to see the impact of new approaches to familiar content; they become empowered with the perspective that educational philosopher Maxine Green (1973) advocated: to become as "strangers" in their own classrooms, able to see their teaching strategies as if it were the first time and engage in the reflective practice (Henderson, 2001) that informs their development as professionals. They may gain the insight that great teaching—in any delivery format—means always trying new strategies and learning from the results, always engaging in "continuous growth and rediscovery" (Zacharias, 2004, p. 1).

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Appendix: Teacher Survey

Please respond to each of the following five open-ended question sets. Feel free to be open and candid in your remarks, since no one will not be able to identify you with your comments (unless your comments pertain to a certain school that you name).

1. Have you reviewed the brief summary of findings you were given from last year's evaluation? If not, please take a moment to read this summary. From your experience with the program, how accurate do you feel the above 2007 evaluation findings are? Are there items that should have been added or received more emphasis? If so, what are they?

2. What do you feel are the most important program improvement issues the program should address?

3. Did you or your students experience technical difficulties in accessing evaluation surveys last year? If so, describe what they were.

4. On what kinds of items would you suggest the next program evaluation focus? What kinds of data should be collected to address them?

5. Has your experience teaching at a distance affected your traditional classroom teaching? If so, in what ways has it affected it?

President's Message continued from p. 119

Webinars

For the past three years, SIGTE has been one of the few SIGs offering members-only webinars on topics of particular interest to supplement ISTE's other webinar offerings. These events are free to our members and announced on the member listserv. Last fall, Punya Mishra and Matt Koehler from Michigan State University led a session called *Technology Integration in Teaching: The TPACK Framework* that was attended by more than 80 members. This lively presentation, followed by questions, described this important construct that moves beyond discussions of technology integration and on to the interaction of teachers' knowledge of content, pedagogy, and technology as key to effective technology use in classrooms. This webinar is archived on the SIGTE wiki under the heading *TPACK*.

The spring webinar *Using Second Life for Professional Development of Teachers and Administrators* will be led by Leaunda Hemphill from Western Illinois University. ISTE has had a significant Second Life presence for a while now, and this webinar is designed to help members think about ways they can begin to use this social networking tool for professional growth. This year's SIGTE Workshop at NECC 2009 will also be led by Leaunda on this same topic to allow some face-to-face time to develop Second Life skills.

National Technology Leadership Summit (NTLS)

Once again SIGTE sponsored the participation of the immediate past-president and the current president at this year's NTLS. The summit focused on characteristics of dynamic media in the context of youth culture, exploring ways to employ these capabilities to address educational goals. Arlene worked with the participatory media in math and science group while Mike worked with the informal learning: participatory media outside school group. This is a tremendous opportunity to meet with the editors of educational technology publications and other leaders professional associations in the content areas.

SIGTE Kiwi

Arlene and I are currently in discussion with educational technology leaders in New Zealand about the possibility of SIGTE organizing a visit to that country next spring. Watch for further information as this opportunity develops.

Teaching Every Student Book Discussion

By Sarah McPherson

The Teaching Every Student Ning (www.teachingeverystudent.ning.com) is designed to support a SIGTE learning community based on discussion of a book titled *Teaching Every Student in the Digital Age: Universal Design for Learning* by David Rose and Ann Meyer. The Ning provides its 323 members the flexibility for discussion forums, blogs, videos, photos, live chat, and links to other resources.

The book selected for discussion this spring focuses on universal design for learning, which is the result of research by the Center for Applied Special Technology (CAST). The full text of the e-book is available at www.cast.org. Interactive links in the e-book demonstrate the principles of universal design for learning and provide resources to a wealth of information about curriculum adaptations for all learners.

The learning community members participating in the book discussion represent all levels of learners, from college professors to K–12 general and special education classroom teachers, to instructional technology coordinators, to assistive technology specialists, to district and state department professional developers. The depth and breadth of expertise of the learning community contribute to understanding the concepts of the book and the collegial networking among the participants. We look forward to continuing the interaction with a meet-and-greet on the evening of Tuesday, June 30, for all those who come to Washington, D.C., for NECC 2009. Watch the Ning for details.

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