eSupervision:
A Technology Framework for the 21st Century Field Experience in Teacher Education

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Despite the complex emotional and interpersonal challenges inherent therein (Koerner, Rust, & Baumgartner, 2002), credential students often comment that their student teaching experience had the greatest influence on their development as new teachers (Clark, Smith, Newby, & Cook, 1985; Wilson, 2006). An essential component of teacher education programs, the field experience serves many purposes. Among them is the opportunity for student teachers to "try on" the role of teacher as they bridge theory and practice, develop a reflective practice, and form a sense of belonging to a community and a profession (Simpson, 2006). An optimal field experience is important to provide for teacher educators who want to prepare their students for the varied challenges they will face in the classroom.

Before implementing reforms, our university used a triad model of student teacher supervision in the field experience. Supervisors and on-site cooperating teachers were assigned to observe and conference with student teachers six times over the course of the semester. Feedback to the student teacher was both formative and summative. The cooperating teacher completed both a midterm and a final evaluation,

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and, in the event the student teacher was not performing adequately at the midterm, developed a growth plan jointly with the university supervisor. One major flaw with this practice was that the supervisor and cooperating teacher were not required to collect evidence or artifacts to support the evaluation of the student teacher. Decisions about passing a student teacher and recommending him or her for a credential were based on the assumption that the supervisor and cooperating teacher had the evidence needed to make such determinations. The process was anything but transparent.

The issues with the field experience at this institution are not unique. In general, the field experience and the student teaching triad model of teacher preparation have been criticized. Chief among the issues are the ill-defined roles and expectations for the supervisor, student teacher, and cooperating teacher (Bullough & Draper, 2004) and the issue of poor communication between the supervisor, the student teacher, and the cooperating teacher (Slick, 1998). Oftentimes, the quality of supervision is inconsistent within the same college (Simpson, 2006; Wilson, 2006). Insufficient training for cooperating teachers is also a serious challenge to creating consistent and optimal field experiences for student teachers (Rodgers & Keil, 2006). Cooperating teachers frequently have little knowledge of the university programs and must rely on their own experiences and beliefs to guide them in their role (Walkington, 2005). These shortcomings are evident in both university-based and online teacher education programs. In her review of the field experience in distance-delivered teacher education programs, Simpson (2006) found that while online programs were more likely than university-based programs to use more sophisticated telecommunication tools such as videoconferencing, the predominant structure of most programs continued to mirror university-based programs.

Although the theoretical potential for addressing problems of the field experience with technology is high, little is known about the actual application of technology to support student teachers during their field experience. Levin and Waugh (1998) noted the potential for telecommunication technology to optimize cognitive apprenticeships in teacher preparation. Joia (2001) similarly suggested that technology could foster learning by housing highly constructivist environments for teacher preparation. However, neither of these studies had direct results pertaining to technology in the field experience.

Research on the use of technology in teacher education courses lends support to using technology within the field experience. Telecommunication technologies (email, discussion threads, etc.) have been used to improve communication between novice and expert teachers and to

promote reflective thinking (Blanton, Moorman, & Trathen, 1998; Bodzin & Park, 2002), as well as to assist teachers in the creation of instruction (Barnett, Keating, Harwood, & Saam, 2002). Within the field experience, Whipp (2003) found that prompting reflections through email helped student teachers reflect at deeper levels. Electronic Performance Support Systems (EPSS) can be used to assist educators during the design of lessons (Liu, 2005; Wild, 2008) and curricula (Juang, Liu, & Chan, 2005; McKenney, 2008; Wang, Nieveen, & van den Akker, 2007). These computer-run systems assist teachers by providing information and scaffolding during routine procedures to help student teachers when they need it most. The question that remains is: Can using technology address the shortcomings of the field experience?

Concerned that the current, traditional model of student teacher supervision was out-of-date and unresponsive to current research on how students learn to become teachers, our College of Education spearheaded a project to re-imagine the field experience. We wanted to build a field experience that was cohesive, connected to and reflective of the university curriculum, and bridged theory and practice. To this end, an instructional program was created for the field experience that included a web-based course management system as the tool for addressing issues associated with field experience. The process of using online technology to support the student teachers in the field was coined "eSupervision." eSupervision was implemented by the authors, one of whom has expertise in teacher education while the other has expertise in educational technology.

The purpose of this article is to describe the eSupervision program and report its effectiveness based on data collected from the first year of implementation. We describe the participants, data collection method and analysis, and provide a discussion of the results. We conclude the paper with recent improvements to the program and suggestions for further study.

Instructional Program: eSupervision

The instructional program is described below in terms of the instructional objectives and technology used to support the program implementation and the conceptual framework guiding the creation of the program.

Instructional Objectives and Technology

Web-based course management systems (CMS) such as *BlackBoard, Moodle, WebCT*, etc. incorporate both telecommunication tools and EPSS capabilities. These systems have the potential to maximize the

benefits of each tool. What made eSupervision unique was that it was not an add-on to enhance an existing field experience program. Instead, eSupervision operated as a system within the CMS. This study was conducted using Moodle, although other course management systems could be as effective. Our instructional program was comprised of five modules, the names of which constituted the major objectives of the program. Table 1 contains information on the five modules and the nature of the work within each module, including the technology used. In order of completion, the five modules were: Analyzing the Teaching Context, Classroom Management, Planning Instruction, Engaging the Learner, and Assessing the Learner. These categories mirrored the foci of California's high stakes assessment for earning a credential and the state's Teacher Performance Expectations.

Each module was constructed using the ICARE system for developing online learning modules. ICARE is an acronym for five key elements

Table 1:
Major Instructional Objectives and Modules of eSupervision
with Description of Content and Outcomes

Objective/ Module	Description	Outcomes
Analyzing the Teaching Context	Student teachers interview their cooperating teacher and observe their classroom for teacher-related elements.	Interview Observation Form3
Classroom Management	Students use the web to search for classroom management ideas and tips.	Short report Reflection
Planning Instruction	Students examine other lessons and write a lesson plan of their own using the embedded performance support system.	Lesson Plans
Engaging the Learner	Students plan and conduct a lesson that focuses on learner engagement, videotaping the instruction. They later view and reflect on their performance.	Videotaped lesson (50 minutes) Reflection
Assessing the Learner	Students read about effective assessment practices and implement one in their own teaching practice.	Report

of online learning modules: Introduce, Connect, Apply, Reflect, and Extend (Hoffman & Ritchie, 1998; Paston, 2000). This system has been implemented in higher education to develop effective online instruction for students (Hatzipanagos, Sadler, Woodman, & Milankovic-Atkinson, 2001; Woodman, Milankovic-Atkinson, Sadler, & Murphy, 2001). In the context of the first eSupervision module, Analyzing the Teaching Context, the instruction began with an introduction to the conceptual framework of the teaching context including the classroom, school, neighborhood and district. The remainder of the module contained activities that required students to connect and apply the new content to their current context and prior knowledge through written reports and weekly reflections posted to the discussion boards. For example, students submitted a report that summarized an interview of their cooperating (master) teacher and an analysis of the classroom context at their school site. As part of the report, students reflected on the similarities and differences between expert and novice practices in the classroom. Using the CMS, students uploaded their reports for assessment by university faculty who provided feedback. Subsequent modules were designed in a similar cycle of concept application, reflection, and feedback.

Technology was used in eSupervision to provide students and faculty with continuous access to information and coursework, as well as support learning activities. The technology included:

- A web-based course management system (Moodle) housing:
    - o Electronic delivery of instruction and submission of work,
    - o Templates for cooperating teacher observations,
    - o Communication tools (discussion forum, chat room),
    - o A lesson planning EPSS (Electronic Performance Support System) and searchable database for submitted lessons.
- A webcam for video conferencing.
- A video recorder for students to record themselves teaching one lesson.

eSupervision required a change in the supervisors' and cooperating teachers' focus as feedback was offered in multiple settings, not simply a string of isolated observations. The program actively guided student teachers through each of the critical elements of teaching: planning, instruction, assessment, and reflection. eSupervision allowed the student teacher, supervisor, and cooperating teacher, together, to work inside the processes of teaching and learning, rather than just interacting around the final product (i.e., the lesson as it is being taught). These online and face-to-face interactions provided the opportunity for all three members of the triad to make their thinking and problem-solving processes visible. For example, before the supervisor made their first visit, the student teacher provided contextual information about the placement such as

classroom demographics, curriculum and textbook, results from an initial interview with the cooperating teacher, and their own initial concerns about student teaching.

Conceptual Framework

The cognitive apprenticeship model (Collins, Brown, & Newman, 1989; Collins, Brown & Holum, 1991) provided the conceptual framework for the field experience with cooperating teachers and supervisors functioning as experts and the student teachers as a community of novices. In traditional apprenticeships, what the apprentice must learn is visible and the outcome is tangible, such as cabinet making as described in Collins et al. (1989). To learn to construct less physical and tangible endeavors, such as teaching, requires making visible the thinking of experts, i.e. the thinking of the cooperating teacher and the student teaching supervisor, evident to the student teacher novices.

eSupervision was designed to be a rich medium for both communication and the development of a community. Communication was asynchronous when using the CMS discussion board tool and email and was synchronous in face-to-face meetings at the school site, the CMS chat rooms, and during videoconferencing. When student teachers were online, they connected to other individuals who were also online through instant messaging. These venues offered numerous opportunities for student teachers to articulate and reflect upon their conceptions of teaching, learning, and real time problem-solving of classroom dilemmas of practice. The university supervisors and cooperating teachers used the CMS to provide feedback and coaching. Each triad member was also part of a larger community of participating student teachers, supervisors, and cooperating teachers, thereby making the conversation rich with diverse approaches to problems.

To support the model, the roles and responsibilities of cooperating teacher and supervisor were redefined so as to engender communication and a sense of community embodied in this cognitive apprenticeship framework. Traditionally, the university supervisors are responsible for taking the student teacher through several cycles of clinical supervision focused on classroom instruction. Because these visits must be spaced over the semester, it was rare for supervisors to observe what happened on the days before and after the observed teaching. In eSupervision, the number of observations by supervisors was decreased and some of the responsibility for evaluating student teachers' classroom instructional practices was shifted to the cooperating teachers who were required to complete three formal observations. Releasing supervisors from some

observations freed them to work more in depth with student teachers on planning, assessment, and reflection via email, online support through discussion boards, and meetings in chat rooms and/or videoconferencing. This, in addition to having supervisors provide feedback on a videotaped lesson of the student teacher, created a field experience with an emphasis on communication, reflection, and effective decision-making.

Method

Participants and Context

Seven cooperating teachers, two university supervisors, and nine student teachers in their second semester of student teaching participated in eSupervision. All of the student teachers and cooperating teachers were situated at one high school. Cooperating teachers had at least four years teaching experience and all had served as cooperating teachers at least once before. Participation by student teachers and supervisors occurred naturally as a part of their participation in the teacher preparation program. Cooperating teachers agreed to complete formal observations of their student teachers using an online form. However, their participation in other aspects of eSupervision was voluntary.

Procedures and Research Instruments

All members of the triads were required to attend three training sessions during the semester (beginning, middle, and end) to orient them to the technology and instructional materials required for the program. The students and cooperating teachers were given a series of specific assignments to complete and submit through the CMS throughout the semester. Supervisors were responsible for scheduling at least three formal observations as well as viewing and offering feedback on the lesson planning and video recording of their student teacher delivering a lesson.

The authors created an interview protocol for each role within the triad. Participants were asked about using the instructional modules and the technologies. They also were queried regarding the impact of the instructional program and technology on their experience as a member of the student-teaching triad and their professional growth. Three weeks before the end of the field experience, all participants were contacted via email to schedule a time to conduct one-on-one interviews with one of the two researchers. All interviews were recorded electronically and later transcribed.

Data Analysis

The two authors plus a graduate of the teacher education program independently reviewed the interview transcripts to discern themes. After meeting and collaborating together, a common series of themes emerged. The constant-comparative method was used to refine the themes further (Glaser & Strauss, 1967). Additionally, the three reviewers cross-compared the responses from cooperating teachers with student teacher experiences and coded them to establish the veracity of the reported outcomes. Coding in this manner added a dimension of richness and complexity to the analysis of the data (Coffey & Atkinson, 1996).

Results

eSupervision represents a major change in the conduct and supervision of field experience at our institution. Because it is a system, rather than an add-on piece, evaluating the effectiveness of eSupervision is complex. One common approach to studying a complex system is to evaluate its parts. In this case, we focused on the use of technology. It is imperative to remember that eSupervision included both technology and people and that face-to-face and online communities were both part of this complex system.

The primary question that guided our evaluation of eSupervision was, "Did the technology enhance or detract from the field experience?" This question was answered within the context of four areas of eSupervision: modules, formal observations completed by cooperating teachers, Lesson Plan Builder (a template created to support the design of lessons), and discussion forums. These four areas cover the main objectives for student teaching and provide a robust description of how technology enhanced and/or detracted from the field experience.

Modules

Work on the modules was primarily an activity completed by the student teachers to which the supervisors responded. At the time of the implementation, seven (of the nine) student teachers sensed that eSupervision was 'extra work' and approached some of the tasks with less than full enthusiasm. Since the participants in this study were half of a full cohort of student teachers, it was surmised that this perception of extra work was probably due to participants comparing their student teaching experience to the experience of students not participating in the program.

Six of the student teachers cited the module titled "Engaging the

Learner" as the most useful. This important module operated not only as an instructional series about motivating students but also served as the fourth site visit by the supervisor. Students designed, selected, and videotaped what they believed to be an engaging lesson, then completed two cycles of guided reflection based on the video. The supervisor viewed the video, read the student teacher's reflections, and provided extensive feedback. Both student teacher and university supervisor evaluations of this component were positive, with several citing it as very powerful. Of the six student teachers that cited this module as most useful, three found the structured reflection was helpful on its own and that supervisor feedback increased their awareness of teaching presence in the classroom. One student teacher described it this way:

> I think the video assignment was really good... [with guiding questions for multiple reflection cycles], and so I knew what to look for, so it wasn't just what do I see? It was well-structured [and] it helped me. The feedback I got from my supervisor was excellent....she pointed out some things that I was completely unaware of, like, I call on boys more often than girls, and then I looked at the video, and I thought, oh my gosh, I do. So it was good, because it was weeding out these little intricacies that I wasn't aware of.

Although they were initially skeptical that watching a videotaped lesson could replace an on-site visit, both supervisors found the videotapes afforded more opportunities to provide helpful feedback than a typical observation. One supervisor said,

> The videotape was, I thought, terrific. It gave me an opportunity to really watch a lesson, to be able to stop it, rewind it, look at it from different perspectives. The students watched it first, wrote a reflection. I then watched it, responded to their reflection, and then they watched it a second time with a little bit different lens, I think, and then reflected again. I felt that was a really valuable portion [of eSupervision].

Cooperating Teacher Observations with Anecdotal Evidence

Using a downloaded template, cooperating teachers were guided to not only observe their students teachers three times over the course of a semester, but also to provide anecdotal evidence to support their ranking of the student teachers. Completed templates were uploaded to the CMS and made available to both the supervisor and the cohort director.

All seven cooperating teachers initially were reticent about completing formal observations of their student teachers. Like the student teachers, they too worried about eSupervision becoming "extra work." They expressed that they had many demands on their time and that

they already spent time working alongside their student teachers. By the end of the semester, however, five of those seven cooperating teachers reported that completing the observations had benefits for both the student teachers and themselves. One explained that doing the observations caused him to think more deeply about his feedback to his student teacher.

The fact that the observations were available to the supervisor and the cohort director added dimensions of structure and accountability that were not previously part of the field experience. While cooperating teachers initially complained about learning to use the technology in this way, their response to this added dimension was positive. As one stated,

> I think anytime you sit down and you formalize something and you know it's going to be submitted to the supervisor—we sit down, we talk about it, we spend a little more time. There's that increased level of accountability. I think that helps.

Student teachers appreciated the formal feedback from their cooperating teachers as well. However, given the amount of daily conversation between the cooperating and student teacher, all nine student teachers reported that the written feedback was not as critical as having face-to-face conversations. One student reported, "I would say that I got more out of my conversations with [my cooperating teacher] than I did on the written feedback, because he's a source that's always there, so I can always just ask him."

In the initial implementation, completion of the written observations by the cooperating teachers was sporadic. This was an issue for one supervisor who counted on this additional information to support the evaluation of the student teachers. One supervisor said,

> Well, there was an issue with the getting of written feedback from the cooperating teachers. They needed a lot of prompting and one of my cooperating teachers finally did do a formal observation with anecdotal evidence. One of the others constantly had problems getting into Moodle and just was, felt he was too busy to do that, in terms of a formal, written observation. The other one just did not do it.

To resolve this issue, this supervisor collected the observation forms through email in lieu of using the CMS.

Lesson Plan Builder

The Lesson Plan Builder served as an electronic performance support system for lesson plan development, a database, a conduit for reflection, and a community builder. It was structured as a template that

included a series of guiding questions and tips for creating an effective lesson. Once completed, the plan was automatically posted online to a searchable database. Student teachers were encouraged to post their plans online several days prior to a supervisor visit to receive feedback prior to instruction. After instruction, student teachers reflected on the lesson and members of the community were encouraged to comment.

Prior to implementing eSupervision, lesson planning had been an issue for this particular cohort of student teachers. They were creating plans, but not on a consistent basis and not with a consistent protocol. This problem was exacerbated by the fact that cooperating teachers had very idiosyncratic approaches and expectations about lesson planning for their student teachers. With eSupervision, a consistent protocol was provided and a new level of accountability was inherently embedded within the field experience for all community members, including the program director.

We originally imagined that the Lesson Plan Builder would be useful to cooperating teachers, but discovered few cooperating teachers used it. Six of the nine student teachers, however, found that their improvement in planning was due in part to their use of the Lesson Plan Builder. One student teacher explained, "I like the Lesson Plan Builder because it kind of set up the stages and we knew what components we needed for the lesson plan. I've improved a lot." Another said, "I'm doing a lot better with planning. I have a better template now and so that's been really helpful in keeping my thoughts organized. And I'm making sure I'm able to involve the standards as well."

Telecommunication Tools

eSupervision played an important role in supporting and fostering communication among the triad members. Student teachers reported that they most frequently used the discussion forum of the CMS to exchange problems that they faced, to discuss and give practical advice, and to receive encouragement. All nine student teachers and six of the seven cooperating teachers consistently reported that use of the forums led to a strong feeling of community support. One student teacher stated, "I think that having that space where we can all feel like we belong, like we're like each other, there's some things we have in common, things that we're going through, it's like a support group."

Another student teacher regarded the discussion forums as the best part of eSupervision and similarly noted,

> I got a lot out of [the discussion forums]. It was nice to know that [other student teachers] have the same questions that I do, and they're dealing

> with the same things at first, like how to signal for quiet, or discipline, and so it was interesting to see that they were also having the same issues and see the different techniques that they came up with to deal with things like that.

Five of the seven cooperating teachers reported a sense of community support, too. As one cooperating teacher noted, cooperating teachers typically do not interact or have an opportunity to learn about the experiences of other cooperating or student teachers. The discussion forums provided a tool for doing that. She noted,

> One thing I did learn was I think technology provides a really cool opportunity to bring the whole community of learners together. So we can get ideas from each other. Because there are all kinds of cooperating teachers on this campus, that I don't normally interact with. But, I can remember a couple times when different cooperating teachers posted something and I read it and thought, "Okay, that's kind of interesting." I think technology can provide a pretty good forum for all us to at least get ideas from each other. …we can't get into each other's rooms.

Creating a sense of community played an important role in informing the practice of the triad members in the eSupervision system. The sharing of common problems that ultimately created that sense of community provided cooperating teachers and supervisors with opportunities to communicate with and instruct student teachers—even student teachers that were not their own. The sharing of problems created a rich context within which cooperating teachers were able to generate discussions they would not have normally had with student teachers. As one cooperating teacher explained, reading about the problems that other student teachers faced gave him ideas for initiating more frequent discussions related to teaching practices with his own student teachers.

University supervisors also used the sharing of common problems as an opportunity to inform their own practice. Supervisors responded frequently to student teacher posting on the discussion forums; these responses were highly valued for several reasons. Eight of the nine student teachers recognized the value of receiving expert advice on issues related to their student teaching experience, especially from supervisors and cooperating teachers who were not part of their own triad. This ultimately contributed further to the sense of community support created through eSupervison. One student commented,

> I think that was my favorite part of eSupervision was the space for student teachers to have a conversation with a supervisor guiding us with advice and reflections on our reflections, to talk about what we

might be going through, what more underlying aspects might be. I think that was very, very supportive because we were able to see other people going through the same thing.

The eight student teachers reported that the conversations on the forums informed their teaching practice in a number of ways. The discussion forums allowed them an opportunity to see a variety of ideas and suggestions. One student reported successfully implementing the ideas presented in the forums in her own practice. Another noted that the advice from experts was a powerful aspect of eSupervision, stating, "Just everybody chimed in [to the discussion forums], like people supervise with tons of experience giving me advice, saying 'this happened to me, a million years ago,' that was my favorite part."

Three student teachers and two cooperating teachers noted that the lack of a human element in eSupervision deterred from the experience. One cooperating teacher noted this and requested more face-to-face meetings with university supervisors. However, the discussion forums served to prompt reflective practices in ways that differed from conversations held face-to-face. One student teacher who noted this stated, "Typing does allow you to reflect on what you're going to type...sometimes I can get things out better when I'm typing them, but I think that there's just something about people face to face." Despite recognizing the important role technology played in their reflections, these five individuals valued face-to-face meetings over the benefits of asynchronous interactions.

Discussion

Although this study represents a small sample, we believe that the results indicate the tremendous potential for eSupervision to improve the field experience. The results indicate that this program enhanced both the cooperating teacher's and university supervisor's roles, built bridges between the university and the field experience, and expanded communication, community, and a sense of support for all members of the triad. More importantly, this limited study tends to support the use of technology as a tool to support the work of preparing teachers for their future in the classroom (e.g., Hew & Knapsczyk, 2007; Joia, 2001; Levin & Waugh, 1998).

In prior studies, technology was used outside of the field experience to improve communication between novice and expert teachers (Barnett et al, 2002; Hew & Knapczyk, 2007), promote reflective thinking through video reflection (Crawford & Patterson, 2004; Romano & Schwartz, 2005; Sherin & van Es, 2005), and assist novice teachers with the creation of instruction (Liu, 2005; Wild, 2008). These outcomes were present under

eSupervision as well, which supports the idea that these same activities are also actualized within the eSupervision supported field experience. This suggests that technology can play an important role in addressing the common criticisms related to the field experience, such as the lack of strong communication among triad members (Slick, 1998) and the tendency for the triad to focus on the observable act of teaching rather than the thinking process underneath it (Nolan & Francis, 1992; Feiman-Nemser, 2001).

This study also supports the notion that the field experience should encourage and support triad members with participation in learning communities and shared problem solving (Cornu & Ewing, 2007) and that such participation can be fostered through the use of a CMS. In this study, the dominant theme associated with the discussion forums was an expressed sense of community support by both cooperating and student teachers. This communication provided student teachers with the emotional support needed to succeed in the field experience while also serving to inform the practices of all triad members in positive ways. Researchers speculated that incorporating learning communities into the field experience was the key to creating and preparing effective teachers (Graham, 2006; Paris & Gespass, 2001).

Conclusion

It is time for teacher educators to change the 75 year tradition that characterizes the typical student teaching field experience and bring it into the 21st century. A technology-supported cognitive apprenticeship model appears to be a powerful framework for structuring the student teaching field experience and managing student teaching supervision. However, more refinement of the program and additional research is needed. Does such a model develop more effective teachers than the traditional model? What effect can eSupervision have on the professional development of cooperating teachers and university supervisors? Will eSupervision be successful when scaled up?

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