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A Technology Supported Induction Network for Rural Student Teachers

Sara Winstead Fry

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Student teaching is a challenging period for preservice teachers as they make the transition from preparation to practice. Support from mentor teachers and university personnel can make this time easier, helping preservice teachers successfully integrate educational theory into their practice. Because of logistical, financial, and personnel limitations, many student teachers with rural placements receive inadequate support. The Technology Supported Induction Network (TSIN) was developed to address these issues by providing support and ongoing professional learning opportunities for preservice teachers through distance technology. A qualitative case study was used to investigate the TSIN's impact on elementary level student teachers. Results indicate that the TSIN's two primary components, a discussion board and compressed video sessions, served different supportive roles. Recommendations for future programs utilizing technology as a way to enhance the preparation of student teachers or provide induction for inservice teachers in rural schools are also discussed.

Introduction

The purpose of this article is to describe the impact the Technology Supported Induction Network (TSIN) had on elementary school student teachers in rural locations. I developed the TSIN to address criticisms about the effectiveness of student teaching that have spanned more than a quarter-century (Goodlad, 1990; Lortie, 1975; Paige, Stroup, & Andrade, 2002). Criticisms of student teaching include the gap which often develops between theory and practice as well as student teachers' resultant reliance on their "own ideas" and "trial and error" for teaching behavior (Freiberg, 2002). While professional development schools have emerged, in part, to address these criticisms (Abdal-Haqq, 1998), teacher preparation programs in rural areas face additional challenges when trying to support student teachers and develop strong school-university partnerships. For example, lengthy travel time and dangerous winter road conditions decrease time available for student teacher supervision and/or the number of visits in a term. Students can't be centrally clustered and complaints from cooperating teachers regarding inadequate supervisory dialogue are common (Gruenhagen, McCracken, & True, 1999).

The Technology Supported Induction Network (TSIN) was developed as an effort to improve support for student teachers. The TSIN was based on existing successful induction and student teacher support programs, as well as recommendations for effective induction (Chubbuck, Clift, Allard, & Quinlan, 2001; Kamens, 2000; Odell & Huling, 2000). Social learning opportunities that bring beginning teachers together to examine professional development topics and share concerns are common in effective induction models. The TSIN used a multi-media delivery model consisting of compressed video, an Internet-based discussion board, email, and telephone to combine successful elements from different studies that used one form of distance technology to support novice teachers

(Brintnall, 2002; Roddy, 1999; Venn, Moore, & Gunter, 2000-2001). Induction and student teaching literature suggest that providing professional growth experiences for student teachers when they have the opportunity to connect theory to their own practice maximizes the potential for learning and the subsequent benefits for children. The following question guided this investigation: What is the impact of the Technology Supported Induction Network on student teachers in terms of reflective practice, curricular support, emotional support, and maintaining connections to their peers and teacher preparation institution?

Background

This study was conducted at the University of Wyoming, a doctoral/research extensive, land-grant university. With its large land area of 97,818 square miles and low population of 494,201, Wyoming has the second lowest population density in the country (*Wyoming QuickFacts*, 2002). For the portion of the state transversed by interstate highways, travel between the eastern and western borders takes six hours. Winter weather can make travel treacherous or impossible. The university is located in Laramie, population 26,885 (*U.S. Census*, 2000), in the southeast part of the state. Because of Laramie's low population, the teacher preparation program has to look for student teaching placements beyond the local school district. Due to the distance between towns, most practicum sites are 50 to 300 miles away from the university. As a result, non-university staff, usually veteran teachers who have been mentor teachers, serve as consultants to approximately 75% of student teachers majoring in elementary education, including those with placements in Laramie. Consultants are expected to visit each student teacher a minimum of two times, weather permitting. Mentor teachers have the primary responsibility for supervision and evaluation.

Although this model makes student teaching viable in a state where geography and weather limit possibilities for faculty supervision of student teachers, it is not without limitations. When asked to identify weaknesses in the teacher preparation program, one student teacher responded to a university-generated evaluation of the program by writing that a problem was, “Leaving, or rather deserting, out-of-state students during residency who are placed outside [Laramie]” (Moore & Leighty, 2003, p. 64). In the same evaluation, another student teacher pointed out that, “Scheduling appointments and visitation times with my ... consultant was VERY difficult” (p. 61). These concerns reflect some of the limitations inherent with non-professorial supervision (Beck & Kosnik, 2002; Venn, et al., 2000-2001), problems that seem exacerbated in rural areas.

Review of the Literature

Social Learning and Induction

Despite spending at least six hours out of an eight-hour workday surrounded by anywhere from a few to several dozen students, a common complaint among teachers is a feeling of isolation (Arnold, 2002; Bull, Harris, Lloyd, & Short 1989; Chubbuck, et al., 2001; Lortie, 1975). Isolation can be intense for student teachers (Kamens, 2000) as well as beginning teachers, yet the needs of both have long been neglected. Despite quarter-century old recommendations for student teaching to include more opportunities for student teachers to interact with their peers (Karmos & Jacko, 1977; Lortie), the learning communities found in teacher preparation courses are not always present during student teaching (Roddy, 1999).

Isolation may also be a factor in high attrition rates among beginning teachers. Arnold stated that high attrition is a result, in part, of “the isolation that many teachers experience beginning with their first day of teaching” (p. 124). Using four national data sets, Ingersoll (2002) determined that 29% of teachers have left the profession after three years and 39% are gone after five. Ingersoll recommended increased induction support to help young teachers successfully negotiate the challenging beginning years of teaching.

Induction helps beginning teachers make the transition from their preparation programs into practice. As Hersh, Stroot, and Snyder (1995-1996) explained, “The teacher who enters a classroom after four years in a teacher education program [no matter how effective the program] is not ready to teach without some ... supervision, feedback, and support” (p. 31). Although induction traditionally includes the first three years of teaching (Feiman-Nemser, 2001), Odell and Huling (2000) recommended that student teachers also receive induction support. Well-established and successful induction programs exist in the United States. Their results are impressive when compared to the 39% attrition rate discussed earlier (Ingersoll, 2002). More

than 90% of the teachers inducted through Santa Cruz’s New Teacher Center were still teaching after six years (Boss, 2001). An induction program in Walla Walla, Washington, also had impressive results – 93% retention after five years (Linik, 2001). The Novice Teacher Support Program in southern Illinois began in 1998 (Chubbuck, et al., 2001) and has successfully retained high percentages of beginning teachers (Legan & De Witt, 2001).

Distance Communication Used in Teacher Preparation

Induction efforts for student teachers and beginning teachers can be supported through distance communication. E-mail has been used to support mentoring relationships since the late 1980’s (Bull, et al., 1989) and continues to be used in contemporary studies (Boss, 2001; Brintnall, 2002; Roddy, 1999). Casey and Roth (1991-1992) found that an email network can double the support and contact student teachers receive. More recently, Roddy, who used email to help student teachers connect theory and practice, explained that without maintaining connections to peers,

their motivation to learn about teaching and to succeed in the classroom is high, but they lose contact with the learning community. They are no longer enmeshed in the web of support, and the kind of understanding about teaching that develops in its absence can be problematic. (p. 260)

Roddy believed email supported reflection and conversation between student teachers and faculty that would not have occurred otherwise. Likewise, discussion board systems are a form of distance communication that preserve messages in one place, allowing participants to easily review previous exchanges. They can be used instead of or in conjunction with email to support beginning teachers (Babinski, Jones, & DeWert, 2001; Edens, 2000).

Compressed video is a form of distance communication that connects two or more locations so participants can see and hear each other in real time (Branburg, 2001). The purpose of compressed video is to create a connectedness between instructors and learners in order to help overcome geographic distances. Compressed video is often used in conjunction with Internet-based discussions, on-line class postings, and phone conferences (Davies & Quick, 2001). Compressed video has been used to support student teachers in rural schools during student teaching. Gruenhagen, et al. (1999) and Venn, et al. (2000-2001) found compressed video effective because it helped faculty increase supervision and feedback for student teachers who would otherwise have had minimal support because of placements far away from the preparation university. Gruenhagen, et al. also recommended an on-site visit before holding compressed video observations and conferences because technology was not an effective replacement for personal

contact with cooperating teachers, administrators, and other school personnel.

Method

Participants

Purposive sampling (Bogdan & Biklen, 1998) was used to identify potential participants for the TSIN. In order to facilitate the peer support that is a foundation of the TSIN, participants needed to be supportive of one another. Because student teaching only lasts 15 weeks and most participants were isolated from one another, there was not time during the TSIN's operation to establish a trusting and supportive community. Therefore, student teachers with established relationships were identified.

The 15 student teachers enrolled in the same humanities methods course met the criteria of having established supportive relationships. Humanities methods is a 6-hour course, part of 18-hours of methods coursework elementary education majors take during the semester prior to student teaching. During this semester, preservice teachers have four weeks of field experience with the same mentor teacher they work with during student teaching. Preservice teachers enroll in a methods section and take all 18 credit hours with the same classmates. Because preservice teachers spend a great deal of time together during this intensive semester, instructors devote time and energy to establishing a supportive classroom community. The preservice teachers in a section of humanities methods seemed to have established supportive bonds with one another that facilitated their ability to provide peer support through TSIN. All 15 agreed to participate; participation was voluntary and no incentives were provided.

At the time of the study, twelve participants were 25 or younger, 14 were female, and all participants were from rural towns or small urban centers. Twelve were from Wyoming; three were from nearby states. Seven participants student taught in the college town of Laramie, while eight student taught in small rural communities that were between 90 minutes and 6 hours away from the university. Although the participants who student taught in Laramie were in an urban area and no more than a 10 minute drive from the university campus, they all reported feeling isolated from the teacher preparation program. Although Laramie's population technically classifies it as an urban area, few residents would describe it as such. Laramie's population includes residents on 40-acre ranches that are less than an 8 minute drive from the center of town. Another characteristic that contributes to Laramie's non-urban feel is that the nearest town of more than a few hundred people is a 50 minute drive away.

Data in the form of compressed video interactions, discussion board postings, and/or exit interviews was obtained from all 15 participants. In order to obtain rich details about the TSIN's impact, the experiences of four

participants were examined in-depth through a smaller case study embedded within the investigation. The four case study participants were given the pseudonyms of BJ, Pam, Chrysti, and Zoro. Each was 22 years old during the study. BJ student taught in a 4th grade classroom, Pam in a 6th grade classroom, while Chrysti and Zoro both student taught in kindergarten classes. Chrysti student taught in Laramie; BJ, Pam, and Zoro student taught in towns with populations between 1,200 and 7,000 that were between 90 minute and 6 hour drives from the university.

TSIN Procedures

The TSIN consisted of two forms of distance technology supported induction: an Internet-based discussion board and compressed video sessions. Telephone and email were used as supplemental forms of support. The Internet-based discussion board was designed to be an integral part of the TSIN where student teachers could post questions, comments, and reflections. Every week or two, a question was posted for common discussion. Participants could respond to the threaded discussion as colleagues and peers, allowing student teachers to problem solve, share triumphs, and seek guidance from the support network they had established during their campus studies. A custom-designed discussion board that was free of charge and could be updated without assistance from a Webmaster was used rather than a commercially available one.

Five 90 minute compressed video professional development sessions were held as part of this investigation. The sessions took place via a compressed video system that connected every high school in Wyoming, as well as the College of Education (Gates Leadership Project, 2002). Since educational institutions pay one fee for unlimited access, there was no additional charge to use the system for the TSIN. The compressed video sessions served two purposes: 1) provide opportunities for student teachers to network with their peers through "face-to-face" meetings, and 2) allow student teachers to examine professional development topics in the context of student teaching with guidance from university instructors. The first compressed video meeting was held the second week of the semester; subsequent compressed video sessions were held every three weeks. Participants selected the topics based on a list of suggestions I developed with participants from the TSIN pilot study. All meetings included the researcher as facilitator and a university instructor who was knowledgeable in the topic of discussion and who also had experience as a teacher and teacher educator. Classroom management was a topic for two sessions; literacy, integrating science and literacy, and job interview tactics were the other three topics.

Data Collection and Analysis

This qualitative investigation was an evaluative case study (Bassey, 1999). I served as the researcher and facilitator of the TSIN. As researcher, I was the principal instrument for data collection and analysis (Merriam, 1998, p. 20), a role that allowed me to “obtain the intricate details about phenomena such as feelings, thought processes, and emotions that are difficult to extract or learn about through more conventional research methods” (Strauss & Corbin, 1998, p. 11). As facilitator of the TSIN, I became part of the support network for student teachers. Additionally, I served as the university consultant to four participants. Because of my in-depth involvement with the data and subjects, I followed a research protocol in effort to represent the data fairly and give subjects a voice of their own (Strauss & Corbin, p. 43).

TSIN discussion board postings, compressed video session transcripts, email messages, observations, interviews, student teaching journal entries, and exit interviews were the data sources used to answer the research question. Discussion board postings, compressed video session transcripts, and exit interviews were the primary sources of data. Multiple data sources led to a fuller understanding of the phenomenon under investigation (Bogdan & Biklen, 1998) and allowed for triangulation (Denzin & Lincoln, 1998).

All data were analyzed for indications of reflective practice, curricular support, emotional support, and the student teachers’ maintenance of connections to their peers and teacher preparation institution. I began analysis during data collection. Analyzing and gathering data simultaneously allowed me to structure future data collection efforts based on emerging themes and hunches, while avoiding collecting unfocused, repetitious and voluminous data (Merriam, 1998). Data were analyzed promptly upon collection; for example, discussion board postings were analyzed weekly.

Open coding (Strauss & Corbin, 1998) was used in early analysis to identify categories and major themes of the data. Afterwards, data were analyzed sequentially using a combination of Miles and Huberman’s (1984) coding procedures. First, I identified repetitive patterns in the discussion board postings and compressed video transcripts. Then I looked for patterns across student teachers. Data from interviews, observations, and journal entries for each student teacher were used to confirm recurring patterns. Double-coding (Miles & Huberman), debriefing (Lincoln & Guba, 1985), and member checking (Bogdan & Biklen, 1998) were used to promote reliability. Memos (Bogdan & Biklen) were used to help make sense of the data while interim site summaries (Miles & Huberman) helped with early data organization and analysis.

Findings

Discussion Board

It made me be a more reflective teacher because we’ve had to share things. I don’t communicate very well so having to think about my thoughts enough to share them was good. – BJ

The discussion board was not an effective means of support for all of the participating student teachers. Only 4 out of 15 participants used the discussion board more than four times. Exit interviews revealed that most of the student teachers simply could not prioritize visiting the discussion board in the midst of their busy school days. Almost every participant reported working ten or more hours a day during the week and having student teaching-related work to do on weekends. The discussion board impacted fewer than half of the TSIN participants, and it primarily influenced their reflective practice.

Reflective Practice

More discussion board postings were classified as reflective practice than the other four categories identified in the research question combined. This may be because each week’s prompting question influenced the nature of the response. For example, Question 3 asked: “Have you started to develop an understanding of your students’ ability levels? Do you need to differentiate instruction for a wide range of learners? How will you go about this?” This question helped responders to reflect on-action, a form of reflection where teachers consider their actions after the act of teaching is over (Valli, 1997). Reflection on-action helped some student teachers make connections between themes taught in teacher preparation classes and experiences they had in practice.

For example, Chrysti’s reflection on beginning-of-the-year interaction with students in her kindergarten classroom demonstrated her emerging understanding about the importance of early assessment:

From day one we have been assessing the kids as they play on the computers. We have also done some interviews that are great assessments. I was really nervous because [my mentor] had me do it during play time, but the kids were so excited to come show me what they know. You really can tell a lot based on social behavior. We still have a lot more assessment to do, but we have done so much already, just by watching the students! ... It seems like “watching” is happening more than “teaching” right now! (discussion board, 9/3/03)

Chrysti was beginning to understand that by watching her students, she allowed them to teach her about their strengths and weaknesses. In a later conversation with me, Chrysti indicated that, as an inservice teacher, she planned to devote ample time to getting to know her students at the beginning of the year. The phrase, "Go slow to go fast," served as a motto for her understanding of the need to take time to develop relationships with students and learn about their ability levels at the beginning of the year so she could plan appropriate differentiated instruction.

Curricular and Emotional Support

The discussion board did not provide an effective forum for curricular and emotional support. The only postings that were classified as curricular support were posted by Zoro, and they consisted of offers to share resources she had used and found valuable. Not once during the semester did a student teacher ask for curricular support via the discussion board. Instead, student teachers relied on their mentor teachers for this, used ideas from the compressed video sessions, and exchanged occasional emails with their peers.

Similar to curricular support, when student teachers needed emotional support, they sought it from their mentors or other educators at their schools. Discussion boards cannot provide immediate feedback. Therefore, if a student teacher had a challenging day, writing on the computer and hoping someone would write back instantly with encouraging words and advice was not a viable option. The discussion board did not develop into a means of emotional support.

Maintaining Connections to Peers

The discussion board was intended to provide a way for student teachers to maintain connections to their peers. Several participants said they doubted they would have stayed in touch with their peers without the opportunities for communication provided by the TSIN. Staying connected was particularly important for the student teachers who were in isolated rural placements.

For example, Zoro sometimes posted purely social messages, inquiring about people's weekend plans and other topics not related to student teaching. Of all the TSIN participants, Zoro was farthest away from the university. An extremely social and outgoing person, Zoro missed having opportunities to spend time with her peers; as she plainly stated, "I don't have much of a social life" (discussion board, 10/27/03). During my second field visit, Zoro's mentor, Angela (a pseudonym) explained her frustration that Zoro didn't have local peers with whom she could get together to discuss the ups and downs of student teaching. Angela critically pointed out that "we expect learning together from our five year olds, so we should expect it from our [college] seniors, too" (interview 2, 10/8/03). For Zoro, who was six hours away from the university and three hours

from the nearest student teacher, the discussion board helped her stay connected.

Maintaining Connections to the Teacher Preparation Institution

During this semester-long investigation of the TSIN's impact, the only time the discussion board served as a forum to maintain connections to the teacher preparation program was during one week in late October. In response to a student teacher-generated question about frustrations, some participants vented about teacher preparation program expectations and inadequate communication. More positively, the discussion board allowed me, as a university consultant, to maintain better connections to the student teachers I worked with than I might have otherwise.

Compressed Video

I borrowed the idea I learned in the Student Teacher meeting last week ... WOW! It went great! – Chrysti

Although there was never 100% attendance for any of the compressed video sessions, twelve student teachers attended one or more session. During their exit interviews, participants reported that the compressed video sessions were valuable and provided information they were able to use in their teaching. Pam explained, "I got at least one major thing from each session; they were very valuable to me" (exit interview, 11/18/03). Other participants commented on how impressed they were by the technology; for most, the TSIN provided their first experience with compressed video. Unlike the discussion board, the compressed video sessions impacted the student teachers in all five areas identified by the research question. Compressed video technology allowed participants to bridge geography and have virtual face-to-face conversations in real time.

Impact on Reflective Practice

Each compressed video session provided professional content and opportunities for the participants to talk about relevant situations they encountered. This set up allowed student teacher to share challenges they had encountered in the classroom, and, with the help of peers and the presenter, develop action plans to improve the situation.

For example, during the compressed video session addressing literacy, Chrysti explained the difficulty she had keeping her kindergarten students engaged during shared writing, an activity that allows one student at a time to write part of a shared document. The student whose turn it is to write gets one-on-one support from the teacher. Because the teacher's attention is directed toward one student, classroom

management problems are common unless the teacher uses methods to keep the rest of the class engaged.

After allowing other student teachers to share possible solutions, the professor said, "Some people [have] the children waiting practice writing on the carpet, or do air-writing, or get a partner and practice it on their back. So they're still really engaged while you're still really engaged with that student at the board." The suggestion was simple and usable, and Chrysti successfully implemented it in her teaching. She wrote in her journal, "I borrowed the idea I learned in the Student Teacher meeting last week ... WOW! It went great!" When I observed Chrysti's classroom two weeks later, she was still successfully using the simple strategy to keep the children engaged (observation 2, 10/21/03).

This example of reflective practice during a compressed video session allowed a student teacher to develop an action plan with guidance from a professor. The action plan was simple, and Chrysti was able to use it the next day. As a result of her success, Chrysti began to see the connections between effective classroom management and minimizing opportunities for children to begin off-task behavior by keeping them engaged academically.

Emotional and Curricular Support

Unlike the discussion board, the compressed video sessions consistently provided opportunities for the student teachers to receive emotional and curricular support. The compressed video session schedule seemed to support this since, approximately, the first 15 minutes and last 30 minutes of each 90 minute compressed video was devoted to personal communications.

There was an undercurrent of stress among the participants on the afternoon of the third compressed video session that resulted in peers providing one another with emotional and curricular support. On this late-October afternoon, Chrysti revealed,

I'm teaching the whole month of November and my mentor just now gave me everything. [She put her hands to her face and covered her eyes for a moment.] My mentor has been teaching for decades and just has everything. It's been pick a file and chose something. But there is no file for November because that's always what she has her student teachers do. So it's like I haven't had that much planning practice up until now, and suddenly I'm just thrown with it all. (compressed video, 10/23/03)

This sudden opportunity to be responsible for all of the planning temporarily overwhelmed Chrysti. Her peers responded with an outpouring of curricular and emotional

support that was helpful as Chrysti faced the challenge of long-term planning for the first time.

Zoro, who, like Chrysti, taught in a kindergarten class, shared helpful planning ideas. Meanwhile, a peer who was in Laramie tore a piece of paper from her notebook, wrote her phone number on it, passed it to Chrysti and quietly said, "I'll help you; give me a call." The guest presenter for the session also offered curricular support by sharing the address for a relevant Smithsonian Institution website. By the time the session made the transition into the professional development topic, Chrysti felt better about the task that lay ahead of her and looked visibly relieved. Helpful, caring responses to student teachers in need of help were common during the compressed video sessions.

Maintaining Connections to Peers

The TSIN allowed the participants to form a virtual community of learners and maintain connections with their peers. Jo (a pseudonym for a student teacher who participated in the TSIN but not the in-depth case study) explained that "just the sharing with each other" was valuable (exit interview, 12/8/03). The compressed video sessions allowed student teachers to have virtual face-to-face contact with their peers. Personal communication seemed particularly important for those with student teaching placements outside of Laramie.

For example, although BJ was happy with her rural student teaching placement, she felt some sense of isolation. At the first compressed video meeting, BJ asked Zoro, who student taught 3 hours away, if she'd like to meet up for a weekend in the town that was halfway between them. Many of the participants took time to exchange current phone numbers (compressed video, 9/10/2003). The personal communication time at the end of the compressed video sessions helped the student teachers to maintain social connections with their peers.

Maintaining Connections to the Teacher Preparation Institution

The compressed video sessions gave student teachers the opportunity to maintain positive connections with their teacher preparation institution. Faculty members and instructors were able to provide curricular support and help participants problem solve situations they faced in the classroom. Earlier, I described how Chrysti was able to get specific feedback from professors about classroom situations she was facing. Another professor offered to send Pam materials that might help her students become more interested in science. These opportunities for individualized assistance from professors would not have occurred without the TSIN.

Conclusions

Answering the Research Question

Fifteen preservice teachers who might have been cut off from concerted support efforts because of their rural and isolated placements or limitations in university supervision voluntarily participated in this study. Levels of participation varied among student teachers, thus the answer to the research question is multi-faceted. The TSIN had a great deal of impact on some participants in terms of reflective practice, curricular support, emotional support, and maintaining connections to their peers and teacher preparation institution, but little or no impact on other participants. The TSIN supported the professional development of four student teachers, played a moderate role in the experiences of four more student teachers, and had little or no impact on the other participants. Levels of participation varied among student teachers; the TSIN had a greater impact on those who participated more.

Whether or not a preservice teacher student taught in Laramie offers one possible explanation for variability in participation. Only three out of eight participants with Laramie placements regularly participated in the TSIN; in contrast, five out of seven participants with rural placements were regular participants. Since student teachers in Laramie were still able to live with roommates, attend campus events, and do other things that kept them connected to the university, they may have felt less socially isolated than their peers in rural areas (although, as discussed in the methods section, they still felt isolated from the teacher preparation program).

The extent of participation in the TSIN was highly variable; no two student teachers used the network in the same way. For example, Pam posted on the discussion board only once but attended every compressed video session. She preferred the face-to-face contact compressed video provided. When Pam visited the discussion board, she often found that someone else had already written something similar to her thoughts. She thus chose not to post and eventually stopped visiting the discussion board altogether. In contrast, Zoro posted on the discussion board more than any other participant but only attended three of the compressed video sessions. No one met my expectation for participation by attending all five compressed video sessions and posting on the discussion board at least once a week even though this expectation was clearly stated in the letter of informed consent participants signed before beginning the study.

The low levels of participation among half the student teachers were a concern throughout the study. I frequently encouraged participation with phone calls and emails. Before conducting exit interviews, I was prepared to declare the discussion board a failure and the compressed video sessions a moderate success. Exit interview responses came as a surprise. I expected participants to be critical of the

TSIN, especially the discussion board. Instead, with one exception, preservice teachers who did not participate much or at all wished they had had more time for the TSIN. Every participant was glad the TSIN was available. Although discussion board use was low, most participants reported that it was useful or could have been useful if they had more time. Eddie (a pseudonym for a student teacher who participated in the TSIN but not the in-depth case study) explained that he didn't participate because "first you're the teacher, then you're the student, so it keeps you pretty busy" (exit interview, 12/2/03). This statement aptly summarizes the primary reason for low participation: time.

Using Distance Technology in Rural Education

It is better than nothing – Zoro

For the TSIN to be successful, participants needed to be comfortable with the technology, and the technology needed to work. Studies using discussion board technology and email to support isolated teachers allude to problems with participant use and satisfaction (Brintnall, 2002; Edens, 2000; Roddy, 1999). In contrast, participants in this study were satisfied with the technology. Although many were uncomfortable with compressed video at first, 11 out of the 14 student teachers who completed exit interviews had no critical comments about the technology at the conclusion of the study. Of the remaining three, BJ never became comfortable with compressed video, Pam found the discussion board impersonal, and Jo had difficulty accessing the discussion board for two weeks in early October (BJ, exit interview, 11/24/03; Pam, exit interview, 11/14/03; Jo, exit interview, 12/8/03). Despite these criticisms, BJ, Pam, and Jo were among the most active TSIN participants.

Although participants reported that the distance technology was user friendly, it seemed inadequate compared to personal contact. Zoro candidly stated, "[Compressed video is] a great benefit because it is better than nothing" (interview 2, 10/8/03). Without distance technology, these student teachers would have had no university-sponsored professional development opportunities and no chance to interact with peers. Since the alternative may be nothing, distance technology is an important way to support student teachers with rural placements. However, teacher preparation programs should consider finding technology with greater appeal. For example, a combination of telephone and compressed video contact may be more helpful than computer-based dialogues.

The TSIN's purpose was not to replace university consultant visits; it was intended to enhance student teacher learning and support. Although the TSIN could be used to enhance supervision and perhaps reduce the number of site visits faculty need to make, it cannot replace the one-on-one feedback that results from observations and follow-up discussions to help connect theory and practice. More

regular communication could compensate when weather makes visits impossible. For example, in Wyoming September and May are the only months of the academic year when one can reasonably hope for good traveling weather. I was unable to complete a scheduled visit to four isolated student teachers in November because of road conditions. However, I was able to have meaningful phone conversations with each student teacher because I already had insights into how they were doing because of their participation in the TSIN. Whether a teacher preparation program uses consultants or distance technology to allow university faculty to supervise student teachers in rural areas, the TSIN can help enhance communication and provide professional learning opportunities.

Improving the TSIN and Suggestions for Future Study

In a rural state like this, I would like to see the TSIN be something that was really in place for teachers. – Jo

This study investigated the TSIN in its nascent stage. Despite the challenges faced during this inaugural implementation, the TSIN seemed moderately effective. With improvement, the TSIN has potential to play an important role in induction for student teachers in rural areas. The TSIN could also be used to enhance the induction experiences of inservice teachers in rural areas since they often face some of the same isolation issues as the student teachers in this investigation (Brintnall, 2002; Hersh, et al., 1995-1996).

The list below provides recommendations for future programs utilizing technology as a way to enhance the preparation of student teachers or provide induction for inservice teachers in rural schools.

- Discussion Board: Have preservice teachers alternate responsibility for developing the prompting question, encouraging participation, and responding to peers by probing for deeper reflection and action plans.
- Discussion Board: Add a document share feature so student teachers can easily share teaching resources with one another.
- Discussion Board: Schedule weekly live chats so preservice teachers can obtain immediate feedback from peers, the TSIN facilitator, and other university personnel.
- Discussion Board & Compressed Video: Align discussion board questions with upcoming compressed video topics so participants can write, think, and talk about issues, thus providing multiple opportunities for participants to make meaning from their TSIN-based professional development experiences (see Marzano, 2003 for recommendations about how to design effective professional development).

- Compressed Video: Schedule a practice compressed video session so participants can become familiar with this form of distance technology prior to their first formal TSIN event.
- General Suggestion: Add intensive regional full- or half-day seminars to the TSIN design so isolated student teachers can connect face-to-face with their peers and instructors.
- General Suggestion: Include a support network for mentor teachers so they can exchange ideas for supporting preservice teachers and receive peer support when undertaking the important responsibility of guiding preservice teachers to be ready for their own classrooms.
- General Suggestion: Explore other forms and combinations of distance technology that may be more user-friendly than discussion boards and compressed video.

In retrospect, these suggestions could have been included in original implementation of the TSIN, although their need was not apparent during the design phase of this project. With the exception of the three general suggestions, these improvements are inexpensive and don't require much additional time on behalf of the participants or facilitator. Despite the greater investments of time and/or money to add regional seminars and a mentoring network, these suggestions have potential to increase the effectiveness of the TSIN as evidenced by Gruenhagen, et al. (1999) and Arnold's (2002) research. Since advances in distance technology are ongoing, it seems reasonable to expect more user-friendly technologies to become available.

Summary

Teacher preparation programs working with rural populations need to find a balance between the impersonal nature of distance supervision and the expenses, both in terms of dollars and time, of faculty visits to rural areas. Recent literature described how distance technology can be used for supervision of student teachers in rural areas (Venn, et al., 2000-2001; Gruenhagen, et al., 1999). This study demonstrated how distance technology can also be used to provide professional development opportunities. Although the effectiveness of student teaching has been questioned for more than a quarter century (Goodlad, 1990; Lortie, 1975; Paige, et al., 2002), the experience remains essential to preparing student teachers. This investigation implemented a new approach to providing induction support for student teachers in an effort to improve connections between theory and practice. Teacher preparation programs have an obligation to effectively support student teachers regardless of their proximity to the university. Student teachers deserve opportunities to engage in reflective practice with peers and with guidance from university instructors. Emotional and curricular support from peers and university instructors can help student teachers successfully negotiate the multitude of

challenges that seem inherent with student teaching. Through concerted endeavors to improve student teaching, teacher educators can help bridge the lamentable gap between theory and practice, thus improving teaching in rural K-12 schools.

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