VIRTUALLY THERE: INTRODUCING THE INTERNSHIP E-ADVISOR IN MATHEMATICS TEACHER EDUCATION

Kathleen Nolan

University of Regina

The purpose of the research project described in this paper is to create and sustain a model of professional development for a faculty advisor and her secondary mathematics student teachers during their four-month internship field experience in schools. In the research, the design and use of desktop video conferencing as part of the faculty mentor/advisor role introduces and explores the notion of an e-advisor. This paper highlights the promises of virtual mentoring in the development of mathematics teachers, while also acknowledging that the process of e-advising is not without its real limitations.

INTRODUCTION

In a recent study with secondary mathematics student teachers (Nolan, 2008), attempts were made to mentor student teachers during their field experience (four-month internship) as they negotiated theory-practice transitions from university courses to school classrooms. The mentoring fell short, however, in that it focused on the student teachers' individual experiences rather than recognizing the benefits of participating in reform-oriented mathematics communities. In response to this realization, I initiated a research project to explore the possibilities of a virtual community of practice during internship. Research on the design and use of desktop video conferencing in the mentoring of secondary mathematics teachers is being conducted through a participatory case study approach with three secondary mathematics interns. In this brief paper, I report on several key aspects of this ongoing research project, including a discussion of preliminary outcomes of two recent video conferences as well as a discussion of new directions and possibilities for developing a model of 'e-advisor' internship supervision.

BACKGROUND AND CONTEXT

In the Faculty of Education at the University of Regina, faculty members are assigned to the supervision and advising of several student teachers (interns) during their four-month practicum semester (internship) in various schools in the province of Saskatchewan, Canada. As part of the professional development process during internship, faculty advisors are expected to visit, observe and conference with their interns 3-5 times per semester. While this may be an acceptable approach under some circumstances, such a 'limited contact' approach is generally not conducive to creating and sustaining a relationship with the intern that is supportive of the intern's professional growth. The visits are too infrequent and generally too short in duration for the faculty advisor to make a difference in the theory-practice transitions of mathematics teachers.

The theory-practice transitions of secondary mathematics teachers are an issue that requires special research and attention in order to realize a desired change in teaching practices. From my perspective as a teacher educator, encouraging prospective teachers to reflect and act on new, inquiry-based pedagogical strategies in mathematics is a challenging task. In spite of introducing new strategies during curriculum classes in the teacher education program, traditional textbook and teacher-directed approaches still prevail in many secondary mathematics classrooms (Jaworski, 2001; Lerman, 2001). Through this research project, I am introducing 'virtual' visits with interns in such a manner that the faculty-student conferencing process is ongoing, synchronous, and without geographical boundaries, expanding into the realm of individual office and classroom spaces.

PURPOSE AND OBJECTIVES

Overall, the key objective of the project is to work toward the development of a working model for creating and sustaining an ongoing, synchronous dialogue between faculty advisors and their assigned interns during the four-month internship field experience in schools. Instead of the current model of visiting interns in schools 3-5 times during the semester, this working model would encourage faculty advisors to supplement these 'real' visits with additional 'virtual' visits; in other words, to introduce and explore the potential role of an e-advisor. It is anticipated that such a *virtual* approach will result in two *real* outcomes: (1) a continuum between pre-internship university courses and the internship field experience can be created and fostered to encourage and stimulate professional reflection on becoming a mathematics teacher and, (2) this new model for intern supervision could result in a reduced burden of travel and labour costs associated with supporting faculty advisor travel between the University of Regina and schools throughout Saskatchewan.

In working toward the key objective, a preliminary aspect of the research project focused on researching the strengths and shortcoming of several available products/applications that support a shared desktop and video conferencing. While the findings of this aspect of the research project are reported elsewhere (Nolan & Exner, 2009), it is worth noting that *Adobe Macromedia Breeze* (now called *Adobe Connect*) was selected as the desktop video conferencing tool for use in this project.

PRELIMINARY FINDINGS

Thus far, I have held two web conferences with the three project interns using *Breeze* software. The first conference session barely got off the ground because one of the interns forgot the time and arrived online quite late; another intern forgot her microphone and the built-in computer microphone resulted in too much feedback to understand her clearly; and the third intern did not seem to be in an environment which had a strong and consistent internet signal. In comparison, the second conferencing session progressed quite smoothly, with a goal of exploring the use of web conferencing for collaborative brainstorming on an algebraic functions and

graphing lesson. In addition to this content-based focus, the plan was also to conduct a general discussion on the internship thus far and if, as a small community of learners, we could use this virtual time to share some of the successes and challenges experienced. Since my desire was to engage in a flowing discussion, where interruptions and "technical difficulties" (like those of the first conference) could be reduced, I made a point of posting the material to be used on several whiteboards, in the chat pod, on the discussion screen, and on my own desktop. I used this variety of tools within *Breeze* so that if one form/pod failed to work well, we could direct our attention to a different one. While our preparation for, and initial engagement in, this second conference seemed much improved over the first, the overall result was still disappointing. The following quote is taken from my researcher reflections (digital diary), written post-conference.

> In general, I found that there were relatively long delay times between actions and the visual representations of them. In addition, we found that the audio feature kept malfunctioning on us. We each tried to be sure that we held down or locked the talk button when we wanted to share something, but for some reason the audio still cut in and out without any of us having a sense of how to fix it. We tried writing more to compensate for the audio problems, but even the chat tool was slow, making the flow of conversation quite a challenge. We tried collaborating on the white board—I would ask the interns to use the text tool to contribute their ideas on how to use a given mathematics problem to teach students about non-linear functions, but even textboxes were not consistent in format or in delay time; some interns could not even find their whiteboard tools (but they did not experience this problem in our training session!).

> At times, it was almost comical. I would ask a question and there would be a long period of silence. I thought perhaps the interns were scribbling on a piece of paper, thinking about and planning how to answer my question. From their perspective, however, they were waiting patiently for me to get on with things, wondering what they were supposed to be doing. As it turned out, I was waiting on a response to a question they did not even hear me ask. The *virtual* environment was becoming a *real* problem!

NEXT STEPS

The two web conferences in this study would not be considered successful in terms of working toward the desired project outcome; that is, to develop a working model for creating and sustaining an ongoing, synchronous dialogue between a faculty advisor and her interns. It is feasible, however, to conclude that there is strong potential for developing such a working model with more time devoted to addressing the limitations.

One limitation of this research project is the issue of student and faculty training in effective use of the technologies. It seems absolutely necessary to either invest considerable time and money into training everyone involved in the use of these more advanced technologies (such as *Breeze*) so that the technology is less of a barrier in working toward the research goals or, alternatively, to use more basic and accessible

technologies that the interns are already quite familiar with through other facets of their lives. These more familiar technologies include wiki spaces, web blogs, Google docs, Moodle, tinychat.com, etc. Thus, the 'next steps' of this research project (underway at time of writing) uses these familiar forms of ICT, hoping that the technology tool itself will become more invisible and we will be able to focus our attention on the pedagogical and professional goals of the research.

CONCLUDING THOUGHTS

Student teachers' negotiations of theory-practice transitions from university courses to school classrooms requires an exploration of multiple modes and models for mentoring and professional development. The use of ICTs in education presents possibilities for creating an ongoing, feedback-oriented conversational approach, which could help establish more of a continuum between university courses and internship field experience. By introducing *virtual* visits with the interns, *real* possibilities exist for taking the faculty-intern mentoring process in a new direction—one that encourages student teachers to discuss and grapple with the many theory-practice transitions facing them at their schools and with their students.

REFERENCES

Jaworski, B. (2001). Developing mathematics teaching: Teachers, teacher educators, and researchers as co-learners. In F.-L. Lin & T.J. Cooney (Eds.), *Making sense of mathematics teacher education* (pp. 295-320). Dordrecht: Kluwer Academic Publishers.

Lerman, S. (2001). A review of research perspectives on mathematics teacher education. In F.-L. Lin & T.J. Cooney (Eds.), *Making sense of mathematics teacher education* (pp. 33-52). Dordrecht: Kluwer Academic Publishers.

Nolan, K. (2008). Imagine there's no haven: Exploring the desires and dilemmas of a mathematics education researcher. In T. Brown (Ed.), *The psychology of mathematics education: A psychoanalytic displacement* (pp. 159-181). Rotterdam: Sense Publishers.

Nolan, K., & Exner, A. (2009). Exploring the *real* possibilities for v*irtual* conferencing during student teacher field experiences. In A. Vilas, A. Martin, J. Gonzalez, & J. A. Gonzalez (Eds.), *Research, reflections and innovations in integrating ICT in education* (vol. 1, pp. 611-615). Badajoz, Spain: Formatex.