

Virtual Classroom Visits:

A Use of Technology to Better Prepare Teachers

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Abstract— In an effort to create higher quality teachers, technology has provided opportunities to examine the teaching act within the context of the classroom. Specifically, Virtual Classroom Visits (VCVs) provide a method for developing professional interpretation skills of preservice teachers when making classroom observations. This use of videoconferencing technology (H.323) allows groups of 35 or more to observe a single class followed by a conversation with a master k-12 teacher.

The Virtual Classroom Visit (VCV), which is only possible because of the technology, Classroom was developed to accomplish three primary purposes: (1) to improve noticing and interpretation skills of preservice teachers to facilitate the increase in their level of expertise as they enter the teaching profession, (2) to provide greater access for preservice teachers to kindergarten to grade 12 (K-12) classrooms with master teachers, and (3) to allow common class experiences related to preservice field experiences to be used in illustrating concepts in the college course.

(Abstract)

Keywords—technology; Virtual Classroom Visits; Videoconferencing; Learner Observation

I. RATIONALE

Political environments in the US and the world require better prepared, high quality teachers. In addressing this issue, Donovan, Bransford, Pellegrino, and the National Research Council (1999) proposed a research agenda for pre-service and in-service education. Included in this agenda is the expectation that current teacher education program content and practices be reviewed for alignment with principles of learning and effectiveness in changing teaching practice. One way to improve new teachers is to help them gain expertise as a portion of their pre-service experience because growth in learning is the “process by which novices become experts” (Bruer, 1993, page 46). Bransford, Brown, Cocking, and the National Research Council (1999) note that experts do not simply have a list of facts or formulas that are used to solve a problem. They approach problems differently by organizing their knowledge around concepts or “big ideas” (Bransford et al., 1999, page 36) that guide them in their problem solving.

Experts determine meaningful patterns of information while the novices make only surface observations.

A review of current preservice observation practices indicated that these experiences were unlikely to change misconceptions of preservice teachers or to move them toward understanding classroom interaction in the manner of an expert. At the College of Education, University of Missouri – St. Louis, the Virtual Classroom Visit was developed in response to the need (1) to improve noticing and interpretation skills of preservice teachers that facilitate the increase in their level of expertise as they enter the teaching profession, (2) to provide greater access for preservice teachers to kindergarten to grade 12 (K-12) classrooms with master teachers, and (3) to allow common class experiences related to preservice field experiences to be used in illustrating concepts in the college course. Addressing these needs also facilitated a greater alignment with the principles of learning.

II. DEVELOPMENT OF THE VIRTUAL CLASSROOM VISIT

Large educator preparation programs such as UMSL’s (2,000+ students enrolled annually) face challenges in providing students with adequate opportunities to observe and interact with practicing teachers. Traditionally, students complete classroom observations as individuals or working in pairs. This work is followed by reflections and analyses, referencing specific points from class or the text. Other than the observation partner, no built-in opportunity exists for the students to discuss the same experience with fellow class members. The process creates experiences that tend to reaffirm what the preservice teacher already thinks instead of bringing misconceptions to light or deepening the level of understanding. Several UMSL faculty members believed that a quality teacher education program required observations and field experiences that contribute to and support the knowledge, skills and dispositions to teach. Thus, the VCV must provide the unique opportunity for teacher candidates to develop pedagogical and professional knowledge as well as credible and targeted real world experiences.

Faculty planned for the VCV by identifying the following challenges of current classroom observations: (1) the difficulty of physically scheduling observations, (2) ensuring that quality teaching is observed, (3) ensuring that

college students can correctly interpret the actions of the P-12 teacher, and (4) providing options for observations in diverse settings. Additionally, a fifth consideration was the difficulty in selecting teaching demonstrations that give clear examples of theory in practice. Faculty identified three primary goals for the project. The first is to provide preservice teachers with more authentic classroom experiences. A second goal is to assist them in developing a deeper understanding of the teaching and learning process. Finally, the third goal is to develop quality teaching knowledge, skills, and dispositions, in alignment with state and national teacher preparation standards.

Observation skills were to form the project's core because exemplary classroom teaching requires continual observation and accurate interpretation by classroom teachers so they can understand and help each K - 12 student to reach his/her greatest level of success. Sherin and van Es (2002) define this capability as "learning to notice". In the classroom, the process of noticing begins with making observations and identifying which of the observations are important. The teacher then hypothesizes an interpretation of the selected observations and chooses a repertoire of strategies that could be used to address this interpretation. The Virtual Classroom Visit needed to encapsulate this process by involving observation, interpreting what is important, matching interpretation to teacher action, and moving from the specific observation to the generalized pedagogy. Preservice teachers that develop noticing skills would be better prepared to use them in their own teaching and thus employ exemplary classroom practices.

Virtual Classroom Visits (VCV) became a process that used videoconferencing technology to focus preservice teacher observations on interpretation of P-12 classroom actions. It was an innovative way of connecting theories of teacher preparation, academic content and classroom practice in preservice teacher preparation. The program uniquely provides instantaneous group analysis of a classroom observation and was grounded in national and local standards, the National Council of Teacher Accreditation's (NCATE) unit standards for educator preparation and the Missouri Standards for Teacher Education Program standards (MoSTEP).

III. OVERVIEW

A visit to a P-12 classroom is powerful experience when an entire class sees the exact same lesson followed by a discussion with the teacher. However, it is impractical to place multiple classes of 25-35 preservice teachers in P-12 classrooms. VCV uses technology to help solve this problem. The twin aims of a virtual visit are to observe master teachers in-action and to organize a process for permitting a conversation between the preservice college class and the master teacher immediately after the lesson. The virtual classroom visit's ultimate goal is to create a community of learners -- preservice teachers and professor -- with common experiences in which to model theory in practice and facilitate

reflective practice based on enhanced noticing skills, ultimately creating greater expertise in preservice teachers.

A. About the Visit

A virtual visit is divided into two components: a 20 to 30 minute videoconferencing session in which the preservice teachers observe a classroom activity, and a 20 to 30 minute videoconferencing interview session, in which the preservice teachers ask the classroom teacher questions about the activity and the classroom. A facilitator from the university (a graduate student or faculty member with teaching certification) goes to the P-12 site and teaches the P-12 students when the classroom teacher is interacting with the college students. Because the observations involve minors, informed consent must be obtained and specific knowledge about the school site is not conveyed to the preservice teachers, so that confidentiality is maintained.

Virtual visits expose students to differing teaching styles and all age levels, providing them with insights to a variety of children's developmental levels. Students, regardless of their major, have noted how helpful they find this broadened exposure to learning development. VCVs were designed to accomplish the following:

- Connect pedagogy to classroom experiences
- Provide a common experience to facilitate discussion
- Expose preservice teachers to a broader variety of classrooms and school communities, particularly urban settings
- Provide preservice teachers access to multiple master teachers
- Develop processes to ensure meaningful learning experiences

The following are critical teaching skills that the process targets:

- Heightened observation skills
- Interpretation skills related to student classroom behavior
- Development of reflective teaching practices

VCV's can provide the unique opportunity for a teacher education program to ensure that field experiences and classroom observations:

- Are used in a variety of university courses
- Take place in numerous P-12 classroom settings
- Target specific topics or teaching theories

IV. METHODS SUPPORTING THE SUCCESS OF PARTICIPANTS

To prepare for a virtual visit, the classroom teacher and the facilitator meet to discuss the educational level of the preservice teachers, the purpose of the specific university class that will be observing, the type of lesson that will be presented, and examples of questions from other sessions. Preparing the classroom teacher for the technical aspects of the videoconference is also required. Special tips regarding clothing, movement, and voice level are provided. Critical issues in videoconferencing etiquette are outlined with the

teacher, such as one person talking at a time, being a good listener, speaking loudly, and pausing before starting to speak because of delay in transmission. The classroom teacher relays these protocols to his/her class. The preservice teachers are prepared with information about videoconferencing etiquette, a brief synopsis of the lesson, a general description of the classroom being observed, and information regarding their role in the videoconference.

A. Technical Issues

While technical issues require a significant amount of preparation and attention, they become easier with experience and with more advanced technology. The video conferencing system is brought into the P-12 classroom and a trial internet connection is established to provide the classroom teacher an opportunity to experience a videoconference and to test the technical aspects of the site at least one week before the scheduled session. With the stand-alone videoconferencing units that are H.323 compliant¹ setup is not technically difficult except for connecting through firewalls. Firewall issues comprise the most serious problems encountered in virtual visits. Most schools do not understand the technology of their firewalls and must call in consultants to reconfigure them. In addition, multiple ports must be opened for both the Internet Protocol (IP) and User Datagram Protocols (UDP)². The final technical issue is that only one site may have a dynamically configured IP. The calls connect most often when the dynamically configured IP dials and the static IP answer the call.

B. Outcomes

A total of 10 master teachers have been recruited and now serve as a valuable resource for demonstrating best practices. After five years of use, more than 75 observations, and over 700 students participating in multiple Virtual Classroom Visits, the results indicate that the partnerships have enriched the preparation of teachers in the College of Education especially in understanding classroom diversity and meeting the demands of urban classrooms. Through the VCV journey, preservice teachers observe highly competent teachers in observations designed to fit specific criteria that exemplify the university's adherence to best practice in both curriculum and management. The VCV program is also valuable in preparing students for their in-person observations. Specific results include:

- The quality of understanding and the sophistication of students' questions increased over the course of virtual visits.

¹ H.323 is an Internet standard that defines how data is transmitted across the network.

² User Datagram Protocol (UDP) is a communications protocol that offers a limited amount of service when messages are exchanged between computers in a network that uses the Internet Protocol (IP). Source: Search Web Services.

- Virtual Classroom visits created a context for developing and asking question that elicit in-depth, reflective responses from the classroom teacher, making explicit a mental model for reflective practice and de-privatizing the act of teaching. Specifically, preservice teachers inquired as to why classroom teachers took certain actions, asked for clarification on student behavior in relation to classroom expectations, tested the accuracy of assumptions made about the classroom environment, and confronted philosophical beliefs based upon inferences from teacher actions.
- As a group, the college class was able to focus on action within the P-12 classroom and to "dissect" what took place. This facilitated the connections between theory and practice that are so critical to teacher success in the teaching field. When responding to the preservice teachers' questions, the classroom teacher often confirmed (reinforced) many of the concepts covered in the class.

V. EVALUATION

Evaluation of initial pilots took a two-prong approach: (1) To what extent do preservice teachers receive support in noticing and are they more reflective as they apply the process of noticing? (2) What types of professor/student interactions are most conducive to positive change in preservice teacher noticing skills? The impact on preservice teachers was assessed through a survey. Two themes emerged from the virtual visits: the preservice teacher valued the experience, and they felt the most beneficial portion was the opportunity to interact with the classroom teachers after the observation/visit. Preservice teachers particularly appreciated the opportunity to observe in grade levels/content areas other than their own. Although students mentioned some frustration because of occasional technical difficulties, they felt that the benefits far outweighed the inconveniences.

As the virtual classroom visits moved from the pilot to broader more general settings, earlier lessons learned were incorporated into the design of the project. During the Winter of 2005 semester, preservice teachers returned 106 surveys. These surveys asked the college student to give a description of the virtual visit experience, to tell what they like and what they thought should be changed. This open-ended prompt elicited various types of student responses. The responses were analyzed to determine engagement as evidenced by emotional words, impact in terms of reasoning or new knowledge, and whether a suggestion was made to improve the VCV.

The level of a preservice teacher's engagement with the observation was measured by counting responses in which preservice teachers expressed particular feelings toward the virtual visit. 61% of the students connected positively with the VCV. Neutral was identified when descriptions contained a list of describing facts, events, or attributes of the observation. Negative was coded when the expressed emotion was one of

dislike, distrust, or discomfort and accounted for only 5% of the responses (see Figure 1).

Overall quality of the virtual visit as a learning experience was coded as positive, neutral, or negative. Positive was counted when a preservice teacher's response noted what they had learned or how they had grown. 50% provided direct evidence that the VCV was a positive learning experience in terms of reasoning (making and supporting conclusions) or through a direct statement of the value of the VCV. 45% of the responses either gave a general statement such as it was "good" without any specifics or made no statement regarding the overall experience (see Figure 2). 5% of the preservice teacher's responses included a negative aspect to the experience.

The third aspect coded in the preservice teacher responses was whether specific suggestions were made to improve the experience. Only 31% had suggestions on improving the VCV experience and many of these were from one particular observation in which some technical difficulties occurred.

A. Summary

The data indicates positive experiences for preservice teachers. Also, these preservice teachers relate that it has helped them understand the complexities of teaching in a classroom. While Virtual Classroom Visits have the possibilities of improving teacher education today, it is the window that they provides into future alternative and powerful ways of addressing teacher training needs and development of expertise that compels us to develop new teacher education methodologies that incorporate technology.

Figure 1. Engagement Identified by Emotional Words

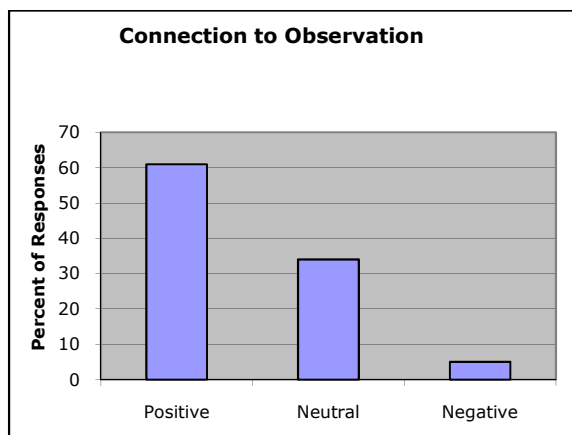
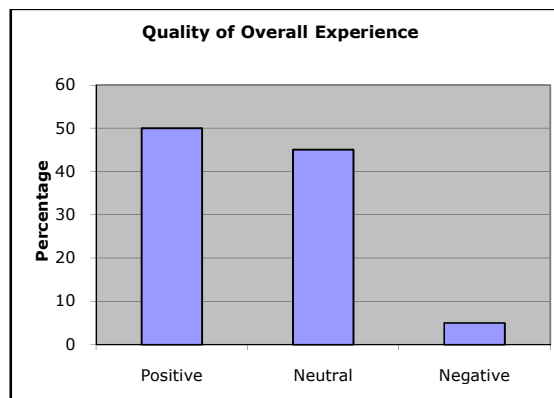


Figure 2. Benefit of Experience



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