



Emergent Reflective Dialogue Among Preservice Teachers Mediated Through A Virtual Learning Environment

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Abstract

This descriptive study addressed the role of virtual learning environments in fostering reflective thought among preservice teachers through dialogic interaction. Preservice teachers tend to view teaching as a formulaic application of theory and strategies. When challenged with making decisions in novel settings, they are often unable to apply previously learned theory and practice. Web-mediated discussions were the primary means for student-student and student-instructor dialogic interactions. Discussion postings and traditional essays of students provided ongoing documentation of their progress in engaging in reflective thinking. Analysis of individual postings, threaded discussions, and essays were conducted using Pathwise criteria for reflection. Results indicated that individual postings generally scored at Satisfactory levels, while threaded discussions and essays scored at Effective or Distinguished levels.

Development of professionalism has traditionally been thought to occur during the inservice rather than the preservice phase of teacher education. Current expectations have shifted, as evidenced in national standards for teacher education that include reflection as one of the criteria for successful teacher candidates. Success may be contingent upon dynamic support that encourages professional growth, specifically the ability to engage in critical reflection. A virtual learning environment can promote encouragement and solutions from a community of learners. This study addressed the influence of electronically-mediated dialogue in promoting emergent professional knowledge among middle childhood preservice teachers.

The purpose of this study was to maintain and extend a university-based learning community by creating a dialogic bridge linking individual members during an intensive, pre-student teaching field experience. The objective of the dialogic community was to encourage students to interpret field experiences in light of theoretical knowledge and classroom experiences and to develop a supportive online community that would encourage members to critically reflect on their practices, values, and beliefs.

Significance of the Study

Importance of Reflection

Reflection generally implies making a comparison between several options of action, interpretation, values, or future intent. Dewey defined reflective thought as the “active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends” (1933, p. 9). Reflection can be defined as the ability to think systematically and apply the results to achieve new outcomes. This cognitive interpretation of reflection is supported by the traditional view that reflection is best engaged in by inservice practitioners who have had informative experiences and therefore have the capacity to make judgments (Kagan, 1992). This view conflicts

with the National Middle School Program Standards (National Middle School Association, n.d., p.18) that preservice teachers should engage in the reflective process to help them become effective practitioners. Contemporary teacher education programs challenge students to justify choices of instructional strategies and clarify professional values. For this to be possible, it is essential that teacher education programs incorporate the teaching of reflective judgment so that beginning teachers are able to engage in intelligent action (Valli, 1997).

The ability to make independent judgments while balancing multiple demands and considerations of classroom practice relies upon various ways of knowing. Schon’s concept of “knowing-in-action” (1983) implies a sensory-cognitive mix that goes beyond formal knowledge and language. Knowing-in-action can be acquired during early field experiences that provide complex situations. Responses to novel situations may vary, which Schon refers to as arising from “reflecting-in-action” or “reflecting-in-practice.” Practitioners become accomplished professionals when they are able to remove themselves from the immediate situation, and interpret it using new perspectives, refining their beliefs and future courses of action. Reflection can be used to evaluate teaching from technical, political, and ethical principles, and critical aspects of the broader social context (Valli, 1997). Reflective teaching attempts to move teachers towards greater awareness of the reasons, motives, and values that influence their pedagogy (Webb, 2000).

One set of standards for teacher mentoring, Pathwise, has formalized expectations for teacher reflection (Cady, Distad, & Germundsen, 1998). In this paper, reflection is operationally defined using the Pathwise performance levels Domain D, Criterion 1, Reflection in the learning process (Educational Testing Services, 1995). The four levels of performance have been identified as unsatisfactory, satisfactory, effective, and distinguished. The criteria for each of the four levels are given below.

Unsatisfactory: Teacher cannot accurately identify strengths and weaknesses of the lesson in relation to the learning goals.

Satisfactory: Teacher accurately describes the strengths and weaknesses of the lesson in relation to the learning goals.

Effective: Meets satisfactory level AND teacher describes how he or she could use the experience from this lesson in future instruction.

Distinguished: Meets satisfactory and effective levels AND teacher supports his or her judgments with evidence from the observed lesson.

Influence of Dialogue in Promoting Reflection

If reflection requires the ability to look at one’s practice from a distance, then how can relatively inexperienced preservice teachers have the capacity to reflect? The power of discourse to clarify meaning and understanding of novel situations may be used. “Speech forms are our great carriers, the easy-running vehicles by which meanings are transported from

experiences that no longer concern us to those that are as yet dark and dubious” (Dewey, 1933, p. 235). The ability of practitioners to bring new insights into an on-going situation may be hindered by unexamined beliefs, limited technical skills, or lack of self-confidence. Teachers should value and use relational knowledge, which can provide a foundation for reflective thought (van Manen & Li, 2001). According to van Manen and Li, relational knowing is a form of knowledge that resides in our relations with others, for example as relations of shared experience, trust, recognition, dependence, dominance, equality, or expertise. It is through relational knowledge that dialogic reflection can occur.

Dialogic interaction among peers can promote enhanced understanding of complex situations. “Collaborative conversation encourages relational knowledge that links what teachers learn and understand about their practice to other conditions that impact student learning” (Hawkes & Romiszowski, 2001, p. 289). Solitary or monologic reflection, often done through journaling, may not be the best approach to examine one’s own assumptions and beliefs. Subjective reasoning was found by Risko, Roskos and Vukelich (2002) to be the preferred strategy for reflective thinking in a study of preservice teachers engaged in individual journaling. As a result, the students’ values and beliefs in this study remained unchanged. The authors suggested that students be required to “reframe” issues from multiple theoretical perspectives. “It is the sharing of assumptions to self and others, not the analytic objectification of assumptions, which reveal who we are and what we believe... Dialogic reflection allows teachers to understand their beliefs by interacting with other teachers and other beliefs” (Webb, 2000, p. 238).

In another study, a group of inservice teachers engaged in a one-time dialogue to discuss innovative strategies. The conversation focused on description and recitation of events, with little attention to beliefs or action. “Perhaps this was due to the lack of adequate time for the participants to develop a level of trust enabling them to explore more fully their ideas, beliefs, and feelings in relations to the larger social and cultural context in which they attempted to innovate (Emery, 1996, p. 118). Emery’s study suggested that sustained conversations and stronger interpersonal relationships were promising alternatives to individual journals in eliciting reflective behavior.

During a semester-long course, preservice science teachers who interacted through online video inquiry-based case studies began to refine their personal understandings of inquiry (Barnett, Harwood, Keating, & Saam, 2002). The technology allowed preservice teachers to view contextualized classroom instruction, and dialogue with inservice teachers as well as with peers. Although this study did not assess changes in reflectivity, it did stress the potential that online interactions offered for professional growth.

Virtual Learning Environments that Promote Dialogic Reflection

Virtual learning environments (VLE) can create ideal opportunities for professional dialogue and reflection. Interactions in a typical real classroom are bounded by time, space, and the number of people in the classroom. If one person speaks, the others listen. The intellectual engagement of the students begins and ends with the scheduled class times. The typical rapidity with which classroom discussion questions are posed or responded to often eliminates many students from active participation. Further, typical classroom exchanges favor quick responses, rather than well-thought out or reflective responses. These dualisms, or limitations, of a real classroom are not part of the virtual classroom. An advantage of asynchronous course design is the extended timeframe that allows for “built-in pauses in communication so important for absorption and integration of material, creativity... and deepening connections between ourselves and others” (Fontaine, 2000, p. 42). Rather than the immediate responses generated in face-to-face dialogues, VLE conversations progress over an indefinite period of time, with multiple opportunities for individuals to respond.

Flake (2001) suggests that VLE can change the focus from individual learning to development of a learning community. “Many ideas will evolve out of social constructions and interactions with others as more and more become involved in the construction process” (p. 47). A community of learners can be promoted by the instructor’s attention to presence. Key elements of presence include high psychological texture, high levels of interactivity, and high meaningfulness of course content that foster merging of individual and shared experiences (Fontaine, 2000). Psychological texture is created by the tone and types of instructor-student interactions, student-student interactions, and through the use of technology itself. “The co-creation of meaning and knowledge... can create a level of reflection that results in ...transformative learning” (Palloff & Pratt, 2001, p. 83).

A recent study compared the reflective nature and amount of communication graduate students made in synchronous chats and asynchronous threaded discussions over a two-week time period. Results indicated that students using threaded discussions made comments that were more reflective in nature, although most comments in either format were descriptive rather than reflective (Davidson-Shivers, Muilenburg, & Tanner, 2001, p. 353). In a similar study, researchers hoped to foster preservice teachers’ learning of educational psychology by creating a Web-based learning community using actual case situations the students had experienced during field observations. Peer responses to the cases were predominantly unsupported advice and opinions (49.3%), while justified claims made up 9% of the postings (Bonk, Malikowski, Angeli, & East, 1998). Although the results from these studies may indicate VLE has limited value in promoting reflection, methodological rather than theoretical issues may be limiting factors. For example, high psychological texture where the instructor is continually facilitating the electronic discussion may have encouraged the students to frame their postings more carefully, using evidence rather than conjecture to respond to the case studies.

Research Questions

This present study addressed the influence of electronically-mediated dialogue in promoting reflection among middle childhood preservice teachers. Two research questions guided this study.

1. Do individual postings, threaded discussions, and essays demonstrate comparable qualities of reflective thought?
2. What role does dialogic interaction have in developing emergent professionalism among preservice teachers?

Methods

Context of Study

Online dialogue within a VLE among 22 middle childhood (grades 4–9) preservice undergraduates was studied using a naturalistic descriptive approach. The students, ranging in age from 19 to early fifties, brought with them diverse backgrounds and life experiences. The students had been organized into a cohort for upper-level core courses and field experiences during a two-semester sequence. At the time of this study, the cohort of students was midway through their second semester, in a four-week immersion field experience in a local school district. Students were placed in either elementary or middle school classrooms, and mentored by a cooperating teacher and the university instructor.

Students engaged in online dialogue using WebCT for four weeks, with a randomly selected group of four to five peers and one instructor. Weekly discussion topics highlighted specific programmatic performance categories of educational technology, planning instruction, assessment strategies, and professional development. Each performance category was used to generate a set of weekly discussion questions. The weekly questions were:

Week 1: Technology. Is technology used to handle chores (drudgery) or is technology used to do things that could not have been done at all, or as easily, prior to the technology (innovation)?

Week 2: Planning Instruction. How does the range of learning style needs of students affect instructional decisions? How do communities make collective decisions about the enacted curriculum?

Week 3: Assessment. How do traditional quizzes and tests promote student learning? What types of student learning can performance assessments measure?

Week 4: Professional Development. What does “professional growth” mean to you? What opportunities promote professional growth? Is reflection a part of professional development?

Students were to initiate and participate in conversations for each weekly topic. Evaluative criteria given to students prior to participation in the online discussion incorporated elements of reflective thought but did not explicitly tell students to be reflective. For example, a posting that had no connection to the weekly topic or to the field experience, or lacked insight or depth, was rated as a shallow entry, and gave the student one point out of a possible three points. A posting that explained the weekly topic and provided an example from field experience earned two points. On the other hand, a posting that explained the weekly topic, provided an example from field experience, and connected to the comments of another team member was scored three out of a possible three points. A posting that incorporated multiple viewpoints or weekly topics scored four points, with the fourth point a bonus point. These scoring criteria encouraged students to connect the weekly topic with school events, personal interpretations, and related experiences of peers. At the end of each week, the discussion rooms were closed to new postings, but students had access to the threads for the duration of the semester.

Postings were read by the instructor twice a day. Scaffolding, or redirection, of threaded discussions by the instructor was moderate. Comments were made sparingly, usually in the form of open-ended questions. If legalistic questions arose, such as regarding child abuse, the instructor made directive comments.

One of the goals of the immersion experience was for students to develop an understanding of the complexity of classroom management beyond mere acts of discipline. Following the immersion experience, students were to select two postings from any of the four weekly topics that they thought best exemplified their current classroom management philosophy. Students wrote an essay explaining how the postings, their site experiences, and formal content knowledge interconnected to shape their views. The instructor rated all postings and essays using the same criteria for reflective thought.

Results

Quantity of Participation

Individual participation was measured by number of postings, with the average number of postings being 37. Group participation was measured by the number of: threaded discussions, postings per week, and postings per thread. (See Table 1.) Each group generated between 20 and 30 threads and 39–68 postings weekly. More postings were made during the first and second weeks of participation than during the last two weeks. Most threads had between five and 12 postings, while some threads consisted of only one or two.

Quality of Individual Postings

Each group’s longest thread per topic was evaluated, for a total of 16 threads. Individual postings within the threads were scored using Pathwise. Of 93 postings, 50% were rated as Satisfactory, 36% as Effective, and 7% each were Unsatisfactory or Distinguished. The self-selected postings showed a comparable range of reflectivity: 48% were Satisfactory, 30% were Effective, 13% were Distinguished, and 9% were Unsatisfactory. Examples of postings from “Technology,” rated according to the Pathwise criteria, follow. (See Table 2.)

Unsatisfactory Level: “He uses articles from magazines, info from the internet and other printed material.” This posting was rated as un-

satisfactory because it did not address how use of magazine articles and the Internet met learning goals or outcomes. The posting contained an observation, but there was no accompanying evaluative component.

Satisfactory Level: “My teacher for this half of the month has yet to use any computers for any purpose. When asked what she does use it for, she said that her students had to do a report... earlier this year...” This posting was rated as satisfactory because it described the teacher’s actions (sporadic use of computers) as well as the connections between use of technology with meeting learning goals (report writing by students).

Effective Level: “When I asked him if I could do a learning station on one of his computers, he did not like the idea too much. He told me to print the information they would need off of the computer...I have given the students activities in which they have the option to use the computers, such as drawing and finding pictures.” This posting was rated as effective because the writer described the situation (using computers as a learning station), the teacher’s reaction (didn’t like the idea), and the writer’s adaptive use of the strategy (optional computer-based activities).

Distinguished Level: “I think the schools have under-used the technology ... they don’t have enough for every child, or even groups of children to use at the same time. ...I really don’t see a lot of everyday usage of the computers.” This posting was rated as distinguished because the writer described a situation (little everyday usage of computers), evaluated the situation (under-use of technology), and supported the judgment with evidence from the observed lesson (not enough computers for every child or groups). Postings that built on other postings to provided additional support to the writer’s position also were rated as distinguished.

Table 1. Summary of Participation by Groups

Group	Weekly Topic	# threads	# of postings	# posting/thread
1 [N = 5]	Technology	20	53	2.65
	Planning Instruction	20	40	2.0
	Assessment	30	44	1.47
	Professional Growth	20	43	2.15
2 [N = 6]	Technology	30	68	2.27
	Planning Instruction	30	46	1.54
	Assessment	20	39	1.95
	Professional Growth	20	48	1.6
3 [N = 5]	Technology	30	55	1.84
	Planning Instruction	20	60	3.0
	Assessment	20	50	2.5
	Professional Growth	20	41	2.05
4 [N = 6]	Technology	30	53	1.67
	Planning Instruction	30	43	1.44
	Assessment	30	50	2.50
	Professional Growth	30	49	1.64

Table 2. Reflectivity rating of selected postings

Source	Distinguished	Effective	Satisfactory	Unsatisfactory
Postings from				
longest threads	7%	36%	50%	7%
Self-selected postings	13%	30%	48%	9%
Essays	72%	14%	9%	5%

Quality of Essays

The essays, based on self-selected postings, demonstrated a more advanced level of reflective thinking than typical postings. Using Pathwise criteria, the essays were richly reflective, with 72% rated as Distinguished, 14% as Effective, 9% as Satisfactory, and 5% as Unsatisfactory. Students viewed classroom management in broad terms rather than from a narrow standpoint of rules. Concepts included: teacher knowledge about students, effective communication skills, and collegiality. Excerpts from essays with Effective and Distinguished scores follow. One student commented on the value of knowing the students' backgrounds: "Will getting to know the backgrounds of my students help them learn? Not particularly. Will getting to know the backgrounds of my students help me teach better? Absolutely." Another discussed the importance of collegiality and professional growth in establishing classroom management: "I don't think teachers need to work in a vacuum or rely solely on their own experiences or knowledge... My belief is that effective classroom management is dependent on not only the teacher being a leader but on the teacher knowing when to get help." Another preservice teacher recognized the value of clear learning goals and linked assessment in helping to establish a positive classroom: "Assessment should be meaningful and every student should be included in the assessment... Assessment is not merely to assign a grade, but to be used as a meaningful measure and reflection of teaching and student learning." Another cited the role online discussions had in helping to form personal conceptions: "Overall... the postings and readings discussed summed up a large portion of my philosophy of teaching. They include the ideas of teacher dedication, proper use of time, effective assessment, measuring, and reflecting upon student learning and teacher effectiveness."

Quality of Contextualized Threaded Discussions

How could individual postings be at low levels of professional thought compared to the students' essays? Rather than snip apart the threads, the reflective nature of the entire thread was evaluated. In the intact Technology thread, progression of the dialogic interaction exhibited multiple levels of reflectivity. Although not every posting was "reflective," the conversation itself developed awareness among the discussants of multiple perspectives related to classroom situations. "Technology" emphasized the underutilization of computer technology by teachers and students. The preservice teachers challenged each other to effectively integrate technology into classroom instruction.

Posting #1, Discussant A: "My teacher... has yet to use any computers for any purpose. When asked what she does use it for, she said that her students had to do a report... earlier this year..."

Posting #2, Discussant B: "I don't see too much technology used... The students are allowed to get on the computers during student assist/study hall, but they have not yet been used in... class..."

Posting #3, Discussant C: "My teacher does not use technology in his classroom... When I asked him if I could do a learning station on one of his computers, he did not like the idea too much. He told me to print the information they would need off of the computer... My instructor is great, but I would like to see more technology used."

Posting #4, Discussant C: "Grades and housekeeping are all done by hand and students only use the computers for pleasure or other course work. I think that this is a waste because there are so many innovative ways to enhance the classroom... on the Internet and computer."

Posting #5, Discussant D: "Maybe you could give a lesson using a PowerPoint... maybe something that the teacher 'controls' would be more acceptable to him."

Posting #6, Discussant E: "Great idea! I love PowerPoint and never really thought about using it... as a learning station."

Posting #7, Discussant F: "I think the schools have under-used the technology... they don't have enough for every child, or even groups

of children to use at the same time. ...I really don't see a lot of everyday usage of the computers."

Excerpts from the "Technology" thread indicate that as a whole, the thread met criteria for reflective practice. Unlike individual postings, which when taken out of context give little insight into the conceptions of teaching that preservice teachers hold, the entire thread shows the development of understanding as mediated through dialogic interaction.

The second weekly topic was "How does the range of learning style needs of students affect instructional decisions? How do communities make collective decisions about the enacted curriculum?" One of the threads, "Talking about divorce during class," revolved around a classroom teacher's frequent references to divorce in response to a personal situation of one of the young students. The preservice teachers discussed the merits of that relative to meeting social-emotional needs.

Posting #1, Discussant A: "...He tries to incorporate divorce in many of his lessons... I really don't know how I feel about this. I know it is important to relate things to students' lives, but is it that important to mention it all the time?"

Posting #2, Discussant B: "...I think talking about divorce... is a little too much... [it] is a good thing just to let the students know that their parents are not the only divorced parents... but I think it should only come up at appropriate times and when it is necessary for the learning process..."

Posting #3, Discussant C: "...I believe that teachers should make a point to get to know their students and where they are coming from, but it sounds like he is only zeroing in on one type..."

Posting #4, Discussant D: "...Knowing their [students'] personal life is important, but only as a basis for understanding when there is an issue, such as not getting in homework, drop in grades, not paying attention, etc..."

Posting #5, Discussant A: "...I just think that he wants them to know the he knows what they are going through and that they can use that experience to help them in life..."

Posting #6, Discussant E: "...he seems to genuinely care for his students and take the extra time and effort to come up [with] ideas to reach students..."

Posting #7, Discussant F: "...I feel as though a teacher needs to be sensitive to the issues... But I think it is against the best interests (read high expectations) of the students to use any factor as a potential 'excuse' for lower achievement..."

Posting #8, Discussant E: "Aren't your students going over the branches of government and black history? How did he fit in divorce is what I'm wondering?"

This thread on divorce provided an example of how a dialogue can bring out the ambiguity and conflicting values that individuals hold concerning themselves and others, while encouraging them to make informed decisions about their future professional practice. Although many of the students were uncomfortable with the frequent classroom references to divorce, they tried repeatedly to view the issue from multiple perspectives. Recognition of the multiplicity of viewpoints can be considered to be a mark of maturity and professional discernment.

The "Traditional and Performance Assessment" thread that arose during week three created awareness of ways to balance the uses of diverse assessment strategies while meeting the needs of unique learners.

Posting #1, Discussant A: "In my first classroom I observed my CT use traditional paper and pencil testing. ...My CT explained that he felt this is the best way to judge what students have learned... Now that I have changed classrooms I am observing a different assessment atmosphere. In my new classroom, my CT is having students present a major and minor project... to the class..."

Posting #2, Discussant B: "I really like the creative ideas that your teacher has come up with as assessment... I think these kinds of things would spark the children's interest. I think that these kinds of things are the hook to getting students into the material."

Posting #3, Discussant A: "You are right ... the students do learn the material because they are interested in what they are doing. Today a student gave a presentation... I was so amazed at how he explained and understood the concept..."

Posting #4, Discussant C: "A teacher across the hall... has her kids draw on t-shirts... She collects the shirts and grades them. I think this is a fun way for the kids to learn..."

Posting #5, Discussant D: "As all of you have said, many students have an easier time expressing what they know in alternative ways than a standard paper-pencil test. Tests seem to be stressful to the students that I have worked with... They seem to answer correctly in class and one-on-one with me, but freeze up on the tests."

Posting #6, Discussant E: "What a great idea! ... Keep this one for your files."

Posting #8, Discussant G: "I think that your teacher should take more advantage of the Internet. I think that the Internet has so much to give to the world of science and that the students should be able to explore science by using the Internet."

Postings from the assessment thread demonstrated an interest and respect for using multiple forms of assessment. The preservice teachers recognized the value of novel strategies, and began identifying ideas, such as the t-shirt assessment, that they would incorporate into their own classrooms. Although only one student experienced the t-shirt activity directly, the rest of the students in the discussion group enjoyed the vicarious experience, and had received enough information through the posting to make it feasible to use the lesson themselves.

The "Reflections" thread, spurred by the fourth weekly topic, "What does 'professional growth' mean to you? What opportunities promote professional growth? Is reflection a part of professional development?" gave insight into how online discussions can create new meanings of the nature of reflection and how a practicing teacher can engage in reflective behavior.

Posting #1, Discussant A: "I think reflections are a way of developing professionally. I am acutely aware... because I just taught a full lesson today for the first time... So I spent the drive home thinking about what happened... making adjustments as to how you taught... and thinking of how to make it better..."

Posting #2, Discussant B: "You're right, when we reflect on what we've done, and decide what we want to do differently that too, is developing professionally..."

Posting #3, Discussant C: "If you are pondering on how to make things better and what worked, then you are developing your teaching styles. Who says you have to develop professionally with others such as in meetings or conferences?"

Posting #4, Discussant D: "...but who says you have to do it by yourself? When someone comes in to observe your teaching and gives you pointers, wouldn't that be considered professional development and reflection? ... A teacher can gain insight by reflecting with other teachers or administrators..."

Posting #5, Discussant B: "I actually have first hand experience with that too. [My] first CT [cooperating teacher] I was [sic] critiqued all four periods I taught for two of the four days. I thought it was really thoughtful of him, and valuable to me..."

In the above thread, "Reflections," students present, modify, and enlarge the scope of their understanding of reflection as an important

element of professionalism. Starting with a narrow view of professional development as attendance at meetings or conferences, preservice teachers' concepts have been expanded to include reflection as an integral aspect of self-improvement. Discussant D's comments about the value of peer coaching coupled with self-reflection as a means of professional development were echoed by other discussants in the thread. Although the immersion experience in the school provided the opportunities for peer coaching, it was the interactive discussion board that gave students the opportunity to share ideas and insights about those peer coaching opportunities.

Excerpts from the above threads, when rated according to the Pathwise criteria, indicate that as a whole, the threads or conversations meet criteria for reflective practice. Unlike individual postings, which when taken out of context, give little insight into the conceptions of teaching that preservice teachers hold, entire threads show the development of understanding as mediated through dialogic interaction.

Discussion

The fundamental question of this study was if dialogic interaction within a virtual learning environment would promote reflective thought among preservice teachers. The evidence, including individual postings, threaded discussions, and essays, embodied different levels of reflective qualities. Individual postings generally scored at the Satisfactory level of reflection, comparable to results from similar studies (Bonk, 1998; Davidson-Shivers et.al, 2001; Risko, Roskos, & Vukelich, 2002). Satisfactory levels of reflection, which indicate students' ability to observe a situation, serve as a precursor to application and judgment in novel situations, but does not signify students' current ability to engage in reflective thought or exhibit professional behavior. A traditional view of preservice students' abilities would have expected attainment of this level of professional responsibility. However, holistic analysis of the interactions among students placed the students at a higher level of professional attainment.

In apparent contrast to much of the earlier data reported in the literature, threaded discussions and essays generally conveyed Effective and Distinguished levels of reflective thought. If threaded discussions are interpreted as a series of individual postings, then the variation in scoring is puzzling. However, if threaded discussions are interpreted beyond the sum of individual components, as a form of dialogic interaction, then the results of this study are consistent with the theoretical tenets of dialogic interaction. Dialogic interactions promote the examination and understanding of one's own beliefs by examining others' beliefs. The clarification and probing effects of each discussant's postings supported cognitive reflection of preservice teachers' professional knowledge, allowing the depth of professional knowledge to develop into more complex ways of knowing and acting. The virtual dialogue provided multiple opportunities for preservice teachers to express their beliefs and offer options for professional behavior, in an atmosphere at once supportive yet challenging, as all discussants provided their personal insights into analysis of school situations. The acts of critically observing and reflecting on the educational value of classroom behaviors—inherent tasks in engaging in asynchronous dialogues—pushed the preservice students to examine their initial assumptions, and led them to include multiple perspectives in their perceptions of teacher practices.

Online dialogue is not a linear process, for just like discussions in real time and space, there can be disagreement, new evidence, and side issues. The extended time frame allowed within an asynchronous environment further promotes the progression toward professionalism, as time to reconsider one's own or others' views is built into the format. The interplay of postings can enhance the possibilities inherent within each individual posting, until a more complex and highly textured scenario can be portrayed, some of which may be speculative, but nevertheless speaks to the possibilities that a teacher can encounter in professional practice.

Support for the influence of dialogic interaction is provided by the conceptual understanding expressed in the students' essays about classroom management. Students overwhelmingly recognized the importance of curriculum, knowledge of individual needs and diverse pedagogy (instruction and assessment), as well as organization, expectations, and rules in developing an effective classroom management plan. It would be difficult to explain the gap in reflective quality from individual postings to students' essays without a holistic reading of the threads or conversations. The essays could not have been written merely as compilations of an individual's postings. Based in personal and peer contributions to the online dialogues and immersion experience, students' essays captured the power that multiple perspectives can bring to a learning community. The essays documented conceptually sophisticated and complex understandings of classroom management beyond the level traditionally expected of preservice teachers, especially before the formal student teaching experience, and beyond the level characterized by previous postings of each individual student. The examination of beliefs and the recognition of professional options were facilitated by the virtual learning community established within the VLE.

Implications

The unique attributes of VLE dissolve dualisms that exist in real classrooms. VLE, unbounded by space and time, creates a sense of both privacy and intimacy. VLE builds a permanent record of ideas, observations, inferences, and emotions that is accessible to discussants as they expand their professional knowledge and experiences. More importantly, the timeline allowed by asynchronous discussion encourages students to mull over personal and vicarious experiences, and reflect upon those experiences in light of theoretical considerations, values, and assumptions. It is perhaps due to these unique characteristics that VLE can guide teachers through that sensory cognitive mix described as reflecting-in-practice. Instructional technology provides for teacher professional growth and for evidence of that growth. The opportunity to share assumptions about practice in an interactive environment clarifies existing personal beliefs and encourages preservice teachers to expand their experiences about the nature of professionalism, as well as how they can become fully engaged in the professional community.

In a future study, the process of reflection among the same cohort of preservice teachers will be studied during their student teaching experience. Questions for this study will focus on whether the reflective process was used during the act of teaching for immediate adjustments, or if it continued to be used only as a follow-up to classroom experiences. More important, will the dialogic interaction of the preservice teachers continue, promoting the incorporation of multiple perspectives into each preservice teacher's professional knowledge?

Further implications for inquiry regarding the value of online discussions may be extended to analyses of mentoring relationships between preservice and inservice teachers. If inservice teachers were included in asynchronous dialogue with preservice teachers and university faculty, it is possible that greater alignment between curriculum theory and classroom practice could be enacted through interactive examination of classroom practices. Additional applications of asynchronous dialogue could be incorporated into ongoing professional development, especially if study groups or critical colleagues were a major component of the professional development approach. The capacity of asynchronous electronic discussions for promoting dialogic interaction leading to reflection, self-knowledge, and enhanced professional practices and relationships promises to be an unlimited resource in the improvement of education in the 21st century.

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