An Exploration
of Online Peer Interaction
among Preparing School Leaders

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Abstract: The goal of this comparative study was to explore the online interactions among members of two learning communities. The two cases examined two different cohorts in the same professional preparation program for school principals and administrators: a distance-learning cohort and an onsite university-district partnership cohort in which online activities supported face-to-face instructional delivery. Of interest here was how students wrestled together to interpret, understand, and support their learning process within the online environment. Because the content and instructor remained consistent in both sample cohorts, the differing modes of instructional delivery offered a unique opportunity for a comparative study. This paper reports preliminary analyses of the content of online exchanges among cohort members of the two learning communities, gener-

ated during the first semester (leadership domain) of the program.

In higher education, instructional technology often supplements traditional instruction and is gradually, yet consistently, viewed as a primary mode of total content delivery. In such online environments, learning is shifted from a teacher-centered model in which the instructor is the source of knowledge to a learner-centered model in which peer support, interaction, and collaboration are emphasized (Harasim, 1990; Lebow, 1993). As universities increasingly use learning networks, faculty and students alike need to understand how online interactions support academic success in distance-learning environments (Browne-Ferrigno, Muth, & Choi, 2000; Choi, 2001; Cox, 1999)

The goal of this comparative study was to explore the online interactions among members of two learning communities. The two cases examined were two different cohorts in the same professional preparation program for school principals and administrators: a distance-learning (DL) cohort and an onsite university-district partnership (UDP) cohort where online activities supported face-to-face instructional delivery. The phenomenon of interest was how students wrestled together to interpret, understand, and support their learning process within the online environment. Because the content and instructor remained consistent in both sample cohorts, the differing mode of instructional delivery offered a unique opportunity for a comparative study.

Context

Professional preparation of school principals and administrators in the State of Colorado is mandated legislatively. The Administrative Leadership and Policy Studies (ALPS) Division of the School of Education at the University of Colorado at Denver is based at one of seven higher education institutions currently authorized by the state to offer training for aspiring school principals and administrators. To parallel the state's adoption of professional standards in 1994, the ALPS faculty progressively revised its leadership education program into a problem-based (Ford, Martin, Muth, & Steinbrecher, 1997), active-learning (Muth, 1999), portfolio-assessed (Muth, Murphy, Martin, & Sanders, 1996) model.

This principal licensing program is structured upon principles of transformational leadership and empowerment, developed through practitioner experience and reflection and expanded through intellectual consciousness (Napier, 2000). The curriculum integrates problem-based learning and action research, exploration of problems of practice through

group projects, online mentoring and instruction, and personal reflection (Muth, 2002). Students progress through a sequence of four learning domains that concentrate on specific areas of school administration and connect to concurrent field internships. Individual and group activities within the domains or "content umbrellas" (Muth, 2000, p. 60) center on four broad topics: (a) leadership studies; (b) school environment, including law and finance; (c) supervision of curriculum and instruction; and (d) school improvement. Mastery of learning is demonstrated through self-constructed portfolios (Muth et al., 2001) with artifacts created through cohort activities.

Characteristics of the Cohorts

The two cohorts compared in this study used a closed cohort structure, keeping students together as a group throughout the entire program (Barnett & Muse, 1993; Basom, Yerkes, Norris, & Barnett, 1995; Teitel, 1995). The closed cohort provides evolving, adaptable learning environments, thus empowering participants through the practical application of knowledge and the integration of personal and professional experiences in their own learning (Napier & Lowry, 1999). One of the goals of the closed cohort structure is to foster ongoing peer support and professional collegiality (Barnett, Basom, Yerkes, & Norris, 2000) while meeting the unique needs of adult students (Mahoney, 1991).

Although both cohorts shared the overall program goal, each used a different mode of delivery to encourage and facilitate learning. The first cohort in this comparative study was a distance-learning (DL) principal licensing cohort. Almost the entire instruction in the DL cohort was delivered through online exchanges using a Web-accessible conferencing software system, FirstClass Client (www.centricity.com). The second cohort, supported by an onsite university-district partnership (UDP), used FirstClass to deliver about 30% of its instructional activities. For both cohorts, the FirstClass communication system allowed private e-mail, "synchronous as well as asynchronous communications, easy file sharing, and Internet access" (Muth, 2000, p. 60). Through its discussion sites, known as "conferences," cohort participants could post questions, comments, and responses to be viewed by all conference members.

Distance Learning Cohort: Virtual Learning Community

To serve increasing demands for graduate licensing programs from rural and semi-rural areas across the state, the ALPS division launched its distance-learning, principal licensing cohort, modeled after its progressive, face-to-face program. Participants in the DL cohort were

required to attend an eight-day orientation on the university campus during the initial summer and to return the following summer at the conclusion of the instructional activities. During the orientation, cohort participants grouped themselves in small, supportive cluster groups of five or six students, determined largely by geographic locale. These cluster groups were directed to communicate at the discretion of the members throughout the entire program. This organization advanced one goal of the opening, face-to-face orientation, encouraging group interaction to "build a shared culture for a strong cohort and effective cluster groups" (Muth, 2000, p. 65). The concluding three-day, face-to-face session held on campus was devoted to preparation for the required state examination, portfolio defense, program evaluation, and a cohort-closing celebration.

Almost all instruction and group discussion in the DL cohort was conducted electronically through FirstClass. For this study, available sources of data about online interaction included (a) open cohort conference discussions, (b) participants' responses and interactions relative to instructional activities and questions, and (c) evidence of other online behaviors such as participation in subconferences and chat-room discussions.

University-District Partnership Cohort: Onsite Learning Community

An urban school district based in a community within a short distance of Denver faced multiple environmental challenges, including (a) state-mandated accountability measures and the accompanying political and public scrutiny of student scores and school report cards, (b) limited resources for implementing school renewal measures, and (c) a poorly developed, economically stressed community support base. In addition, the district immediately needed to develop administrative talent to alleviate its current shortage of potential school principals and administrators, particularly at the secondary level. Thus, a new partnership was formed between ALPS and this urban school district to sponsor the UDP cohort.

Consistent with the DL cohort, sources of online interaction data in the UDP cohort included: (a) open cohort conference discussions, (b) participants' responses and interactions relative to instructional activities and questions, and (c) evidence of other online behaviors such as participation in subconferences and chat-room discussions.

Comparative Methodology

The learning activities during the first domain of both principal-preparation cohorts focused on leadership knowledge and skill development as specified in two of the six state standards (Colorado Department of Education, 1997): "The principal leads and supports a school commu-

nity that is committed to and focuses on learning" (Standard 2), and "The principal behaves ethically and creates an environment that encourages and develops responsibility, ethics, and citizenship in self and others" (Standard 3). Further, the activities supported an underlying premise of the state's Standards for School Principals that principals and administrators recognize their roles in schools and are confident of their abilities to lead those schools into the future.

The online interactions among participants in the two cohorts allowed comparisons of the virtual communication patterns used by a distance-learning cohort and an onsite cohort to build learning communities. The phenomena analyzed in this comparative inquiry were the type and content (Weber, 1990) of posted messages. The analysis of message type differentiated between non-responded messages and threaded discussions. For initiated messages that evolved into threaded discussions, the message type classified connecting patterns of the response messages and identified the last message posted within the discussion. The analysis of message content identified specific references within the body of posted messages as described below.

Analysis Matrix and Coding Key

A matrix for analysis of online messages was developed collaboratively by the team of investigators, and analysis was conducted using the guidelines outlined by Miles and Huberman (1994). The coding key included symbols for (a) the type of posted message and (b) the content of the message (see Tables 1 and 2).

The display format for messages in FirstClass allows a viewer to discern quickly the differences between threaded discussions and non-responded messages. Therefore, we were able to begin with the first message posted in the leadership "conference" (a discussion site) and classify messages either as a non-responded message (M), to which no

Table 1
Coding key for Message Type

Code	Description
I	Initiated message
R	Response (in general)
Ri	Response to initiator message
Rr	Response to respondent message
C	Close of threaded discussion (last message)
Ci	Closed as response to initiator message
Cr	Closed as response to respondent message

Table 2
Coding Key for Message Content

Code	Description
a	Reference to assignment (clarification, redirection, reminder, wrap-up)
g	Greeting and/or closing
n	Suggestion for action
o	Reference to another message in 5700* conference and/or subconference
c	Reference to cohort activities and/or studies
p	Reference to personal matter and/or personal message
r	Reference to professional responsibilities and/or experiences;
s	Self disclosure: I agree, I believe, I disagree, I feel, I found, I think
t	Reference to technical support and/or trouble
L	Reference to leadership theory and/or practice

Note: 5700 indicates the course number for leadership domain

written reply was made, or as a group of messages within a threaded discussion (T). All files within a threaded discussion were linked and coded as one threaded discussion. The messages were coded as either M or T and numbered in chronological order by date, beginning with the first message to appear in the conference.

Dates of initiated messages and closing responses in threaded discussions were recorded in the analysis matrix. The FirstClass system posted messages within a conference based upon the date of the last response within a threaded discussion. Non-responded messages were listed as ending on the date the message was posted. Further, threaded discussions were posted in chronological order according to the date of the last message in the thread. Including the dates of the message postings allowed analysis of change in message content over time. Permission to analyze online messages was obtained from all participants in both cohorts according to university human subjects requirements.

Guiding Assumptions

Assumptions guiding this comparative study of cohort connectedness defined the message coding keys used during the analysis phase. The first assumption was that online interactions that fostered self-disclosure of personal matters and allowed personal sharing would be more prevalent in the onsite cohort than in the distance-learning cohort. Opportunities to engage in personal, face-to-face interaction with cohort members, we hypothesized, would generate feelings of familiarity that engendered trust. Additionally, cohort norms that supported peer-to-peer encourage-ment, as evidenced by the intensity and volume of peer-to-peer interac-

tions, were expected to be different in the two learning communities. Thus, coding keys for message content included identification of references to personal matters or personal messages. A code for marking personal greetings or closings was added as a means to assess the level of personal connection to other cohort members.

In addition, the analysis also identified who initiated messages that transformed into threaded discussions to determine whether the messages were instructor initiated or student generated. Message content codes were used to identify references to self-disclosure statements (i.e., statements that began with the words "I agree," "I disagree," "I believe," "I think") and to identify expressive and humor-infused interaction.

Another underlying assumption was that, despite training for both cohorts in the use of FirstClass, students would report uncertainty or confusion about using FirstClass during the early days of both cohorts. Therefore, as students struggled to learn how to communicate with this technology, they would offer peer support which would encourage cohort connectedness. Thus, a message content code was created to identify references to technical support or to trouble with or uncertainty about using FirstClass.

Some Surprising Findings

A cursory scan of online exchanges within the two leadership conferences indicated that the cohorts engaged in markedly different types of virtual communication during the beginning phases of each program. Based upon the analysis of the online exchanges, findings suggest that opportunities to engage regularly in personal, face-to-face interaction with other cohort members increased the level of cohort connectedness within the onsite cohort when compared to the online cohort.

Technical Support Postings

References to technical support or trouble appeared in 27 (51%) of the 53 DL cohort messages. Eleven of these were non-responded messages generated by the cohort instructor. Six were threaded discussions initiated by different students with only the instructor responding. Only two of the threaded discussions in the DL conference were initiated by students and responded to by peers.

By contrast, references to technical support or trouble appeared in 14 (9%) of the 159 UDP cohort messages. Three of the instructor-generated non-responded messages link technical support to another assignment. Eight student references to uncertainty about FirstClass appeared within both non-responded messages and threaded discussions among students

during the first two weeks of the assigned online activity. The last reference to technical trouble made by a student responded to an instructor's message about completing an online assignment. In this instance, the student wrote that he was unable to participate in one of the online activities because the system was off-line when he tried to complete his work.

Although students enrolled in both the DL and UDP cohorts received training in the use of the university's electronic communication system prior to beginning online activities, data indicated that students in both cohorts reported technical difficulties and received guidance from the instructor as well as their peers throughout the entire timeframe examined. While it may be tempting to assume from the statistics that the DL cohort experienced and reported greater difficulty using the online communication system than the UDP cohort did, UDP student responses to a questionnaire about using FirstClass suggested otherwise. Sixty-five percent (65%) of the respondents stated that they did not encounter major difficulties using FirstClass. Further, the range of challenges for the other respondents included not being able to log-on because of an incorrectly spelled user name to simply needing additional assistance from the FirstClass administrator or a technically adept spouse.

One student reported significant difficulty and did not engage in online activities until two weeks after the assignment had been made. Once she learned to use the electronic communication system, she participated as actively as the majority of her peers.

> *I almost died learning FirstClass. It took several weeks to feel comfortable understanding and using the system. I first had to get hooked up to an Internet provider, then to a search engine to be able to use on my laptop. Then I had to load FirstClass… [and] learn how to navigate around in the system. The class names were even foreign. I worked and worked until I became comfortable using the system.*

Another student voiced a different type of frustration:

> *I would have liked more immediate feedback. I felt like I was throwing ideas to no one in particular. Probably years of "Pavlovian" conditioning has left me hungry for an immediate response.*

Leadership Domain Exchanges

Only 53 files were posted in the leadership domain of the DL cohort. Thirty-three (62%) of those messages were instructor-generated. Conversely, although the UDP cohort met together as a group almost weekly, the cohort generated a total of 159 files in its leadership conference. Of those 159 entries, only 20 (13%) were posted by the instructor. Up to this

point, the data record strongly suggested that online interaction within the DL cohort would be academically based and less personally linked when compared to the active nature of online communication among members of the UDP cohort. The intensity and volume of peer-to-peer interactions within the conference exchanges suggest that peer-to-peer support and encouragement developed more quickly in the UDP cohort than in the DL cohort.

In addition, the structure of the DL cohort was such that "subconferences" were created to house peer-to-peer exchanges among geographic cluster groups during the duration of the leadership domain. Further investigation of the DL cluster-group subconferences revealed another interesting set of findings. Evidence of collaboration and peer support emerged more frequently in the cluster-group subconferences than in the general DL conference. While one cluster group created as few as 35 messages, another exchanged 344 messages during the entire program. The other three cluster groups generated 83, 67, and 64 messages. Although the content of the messages was academically driven, cohort members included personal matters as they related to their participation and performance. In one cluster group, cohort members began to seek peer support in terms of clarification and open sharing. Additionally, members were "checking-in" with each other and frequently inquired about peers who had withdrawn from active participation in their virtual community.

> *Where is K_____? I knew she was having some trouble with her computer but . . . It's not like her not to be in touch.*

Analysis of the UDP student messages, on the other hand, showed limited incidence of personal sharing or personal messages until the 26th message in the sequence. The student who initiated the threaded discussion began her reflection with a quote from *Leading from Within* about the "…[spiritual] gift available to all who take on inner journey" (Parker, 1999, p. 87). She then wrote,

> *In the chaos of my husband losing his job, losing our house, starting again at forty years of age and having two active teenagers, I came back to life (literally because I was confined to bed with Lupus).*

This student's bold risk-taking initiated the UDP cohort's norm on personal sharing within reflections about the assigned readings. Two responses focus on peer-to-peer support and reference their own times of chaos (e.g., a parent's recent death and another parent's confinement to a nursing home). Other students then began to share openly their spiritual and religious convictions, and these were discussed and debated

over several weeks. Some students also disclosed their struggles with drug and alcohol use as teenagers and their reactions to divorce. Nevertheless, their personal sharing stayed connected to the content of the assigned readings, suggesting that these exchanges facilitated reflective responses to the cohort's leadership studies.

Implications

Electronic communication networks in colleges and universities worldwide increasingly expand opportunities for collaboration among faculty and students (Holden & Wedman, 1993; Picciano, 2001). Members of virtual communities use dialogue to learn, reflect, debate, critique, share, give feedback, question, answer, and engage in multiple other communicative behaviors (Henri, 1992; Mason, 1994). Further, through opportunities to engage online in social negotiation of concepts and ideas, learners can seek solutions to problems of practice from multiple perspectives (Muth et al., 2001). Thus, information technology has potential to become "a permanent, respected, and increasingly essential component of the college experience" (Green, 1996, p. 24).

As findings of this investigation show, online communication among learners can provide mutual support and stimulate sharing of ideas and information, risk-taking and reflecting on practice, and learning through cooperative efforts (Anderson & Lee, 1995; Bonk & King,1998; Ryan, Hodson, & Ali, 2004). The adoption of information technology in educational communities creates shifting roles for both instructors and students (Beller & Or, 1998; Bonk & King,1998; Collison, Elbaum, Haavind, & Tinker, 2000; Picciano, 2001). Learning by doing and by sharing information and ideas in a virtual world allows the instructor to facilitate and guide rather than dispense knowledge through lecturing and telling.

However, this "guide on the side" (Beller & Or, 1998; Cifuentes, 1997) approach to collaborative learning raises questions about the quality and experience of virtual learning. Cyber-learning skeptics warn that technology may offer a false or artificial sense of learning that diminishes individual capacity and leads to fragmentation (Heim, 1993). Proponents of instructional delivery through technology maintain that computers promote learning because they allow ample time for quality feedback, provide a buffer for those less adept in face-to-face communications, and enhance spontaneity (Bresler, 1990; Collison et al., 2000; Meyer, 2003). Some findings suggest that learning in virtual communities increases creative flow and collaborative possibilities (Bonk & King,1998; Knox-Quinn, 1993). These and other findings suggest that

more study is needed to determine the best ways to build online learning communities.

Questions for Further Discussion

A few questions about building learning communities arose from the findings of this comparative inquiry. One concern relates to engagement of students in online activities. Data clearly show that not all students in the two cohorts readily embraced the idea of actively participating in asynchronous online dialogue. While some students in the UDP cohort reported enjoying online activities, several revealed their reticence for sharing personal views and reflections in the public domain of an online conference. Further, three UDP students posted three or fewer messages among a total of 139 student files, and four of the students in the DL cohort never posted a message within the leadership domain. If collaborative sharing is a key element of online student learning, is it important for all students to participate in electronic activities? If so, then what accountability measures does an instructor need to use to ensure student engagement?

Another question concerns online conferencing and student learning styles. In face-to-face classroom situations, some students are very willing to share their thoughts and ideas openly as fuel for discussion and debate among peers. Other students prefer to listen and observe classroom exchanges and then introspectively reflect about what was said. An instructor can observe facial expressions and body language to discern if quiet students are engaged in the classroom activity and even elicit responses through direct questioning. In a virtual environment, however, an instructor cannot always discern if "quiet" students are actively participating. Even the fact that a message has been opened does not mean that it has been read. Taking account of different learning styles, what strategies can an instructor use to promote active student participation in online activities? Fulfilling the promise of online learning may depend on our efforts to find answers to such questions about the role of online interactions in student learning and educational success.

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