ED 382 451   SE 055 881

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TITLE   So You Want To Use a Class LISTSERV in Your Science
                Methods Class: Insights Shared on Nurturing Along a
                Virtual Community Outside the Graduate Science
                Methods Classroom.
PUB DATE   Jan 95
NOTE   32p.; Paper presented at the Annual Meeting of the
                Association for the Education of Teachers of Science
                (Charleston, WV, January 5-8, 1995).
PUB TYPE   Reports - Research/Technical (143) --
                Speeches/Conference Papers (150)

EDRS PRICE   MF01/PC02 Plus Postage.
DESCRIPTORS   Computer Uses in Education; Course Evaluation;
                Elementary Education; Higher Education; *Methods
                Courses; Science Curriculum; *Science Instruction;
                *Telecommunications
IDENTIFIERS   *Listservs

ABSTRACT
        This paper summarizes one semester's use of a class
LISTSERV with a graduate elementary science education course (n=9).
Data were collected on student comments regarding the class LISTSERV
from nonstructured interviews, E-mail inquiries, and an
end-of-semester questionnaire. Student feedback indicated that
student interest in communication technology was piqued by the use of
the electronic discussion group in a graduate class, that the
LISTSERV professionally enhanced both their graduate and teaching
experience, and that it added an alternative communication option
that distinguished this graduate class from the typical fare. The
primary instructor insight was that the use of a class LISTSERV
enhanced his professional development as a science educator teaching
graduate classes. Appendixes feature sample LISTSERV entries.
Contains 12 references. (ZWH)

So You Want To Use A Class LISTSERV in Your Science Methods Class: Insights Shared On Nurturing Along A Virtual Community Outside The Graduate Science Methods Classroom

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Paper presented at the annual meeting of the Association for the Education
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Abstract

This paper summarizes one semester's use of a class LISTSERV with a graduate elementary science education course ($n=13$). A class LISTSERV is an electronic mail discussion group that consists of members of the class who can access the INTERNET via computing technologies. Student feedback as well as insights from the instructor are presented. Student feedback indicated that the students' interest in communication technology was piqued by the use of the electronic discussion group in a graduate class, that the LISTSERV professionally enhanced both their graduate and teaching experience, and that it added an alternative communication option that distinguished this graduate class from the "typical fare." The primary instructor insight was that the use of a class LISTSERV enhanced his professional development as a science educator teaching graduate classes. Because of the usefulness of the LISTSERV in the graduate class setting, the instructor benefitted from learning how to use and apply technology, thereby enhancing his professional skills. The instructor developed the new role of the LISTSERV owner and obtained the technological and pedagogical skills necessary to fulfil the LISTSERV's educational potential.

Introduction

Communication technology, the essential component of "the Information Superhighway" (or, more formally, the "National Information Infrastructure," NII) is of great interest throughout contemporary American society. Communication technology enables those with computers and access to the INTERNET (a vast network of computers) to communicate electronically. Universal access to the NII by the year 2000 is a stated goal of the Executive Branch of the U.S. government (Debnam, 1994). Benefits for science education are envisioned to include teachers and learners being able to conduct extensive scientific research from a computer, collect data from throughout the world for scientific investigations, and even to conduct scientific experiments on powerful supercomputers. The challenge faced by proponents of the NII is to ensure that all Americans of differing economic, gender, geographic location, or other factors have access to benefits of this technological innovation.

This paper describes one attempt to introduce communication technology as an integral part of a graduate elementary science education class. The philosophical referents of the class were constructivism and empowerment (Chaile & Britain, 1991; Kincheloe, 1991). The communication technology used was a class LISTSERV, a special electronic discussion group. As sole instructor for the class, my goals for the communication technology infusion were two fold: (1) to test if electronic discussions have the potential to become a meaningful part of initiative to enhance the professionalization of science teachers (and if so, how), and (2) to add a new dimension to the typical fare of higher education graduate science education classes which would increase student interest in the course.

This action research study seeks to contribute to the emerging literature on communication technology by focusing on the use of a LISTSERV in a graduate science education class at a major university in the Northeast. Currently, the literature contains a limited number of descriptions of the use of E-mail and LISTSERVs in professional educational research societies (for example, see Pierce, Glass, Young, & Soucy, 1994) and in large lecture science classes (see Boehmer, Levin, & Levin, 1994). The need still exists to document practitioners' attempts to infuse the

3

technology in other educational contexts, including graduate science education classes.

Background of Communication Technology

To assist those who have a limited knowledge base in communication technology, a brief overview of the technology is presented.

The internet (or 'Net) is a worldwide network of networks (including BITNET, Compuserve, Prodigy, and others) that connects computer users (an estimated 20 million and growing daily) in the military, businesses, government, universities, and in private homes (Krol, 1992). It was developed by the U.S. Defense Department for use in studying computer networks. Currently, it has evolved into a public system maintained by volunteers and accessible to anyone with the proper hardware and software who holds an electronic account (Dahne, 1994). The internet provides electronic mail, file transfer, and other services. Information that is available for share is stored in thousands of computers dispersed around the world. To gain access to that information, the user needs a computer with a modem, a connection to a computer on the Internet, and permission to connect (Boehmer,et al, 1994).

The computer program known as LISTSERV was written by Eric Thomas (Pierce, Glass, Young, & Soucy, 1994). The LISTSERV program is maintained on hundreds of host mainframe computers that are on the BITNET/INTERNET network. The program can maintain many different conferences (mailing lists) known as Lists at any institution. A List is created by a manager who provides a name for the special discussion group (which by notational convention ends in -1), decides who can join, writes a greeting that minimally establishes the public forum of the discussion and provides guidance on how to sign-off the discussion group, and provides the minimum maintenance the list requires (e.g. purging subscribers at the end of the semester). Typically, the LISTSERV address is unmoderated, which means that anyone who is subscribed to the list can directly send an e-mail message to everyone on it. When subscribers send a message to the LISTSERV address, the message is automatically distributed to all on the list. Private messages can be sent between individuals on the discussion group by using their personal addresses rather than the LISTSERV address.

There are three options of network tools to communicate with groups of people on electronic mail: Alias List, Mail Reflectors and LISTSERV (Atlee, 1994). While all three options allow an instructor to broadcast E-mail to a specified list of recipients, they differ in significant ways. For one-way communication between the instructor and the class, the Alias List is sufficient. The Alias List can be set-up independently by an instructor who is on a electronic mail program. The entire class of students is addressed by using a single nickname. For example, communication from the instructor to the students regarding homework assignments and lecture notes, for example, is adequately performed by this option. For two-way communication between the instructor and the students in a common forum, for example a post-class discussion in which everyone could respond, the options are the Mail Reflector and the LISTSERV. Both the Mail Reflector and the LISTSERV allow participants to send e-mail that is automatically distributed to everyone on the list. Both the Mail Reflector and the LISTSERV require assistance setting up by computer service personnel. They differ by two factors. The Mail Reflector systems do not automatically archive messages in a central location which list members can later easily access while the LISTSERV does archive messages; Mail Reflectors place a burden on individual computers' storage space while the LISTSERV does not since all messages are stored in one central location.

In this teacher education experiment, I selected the LISTSERV to use as the communication technology. I needed a two-way electronic mail discussion group and the LISTSERV offered all the services of the Mail Reflector and some additional essential services that would support research, particularly the automatic archiving of messages.

Setting

The course I selected in which to use the class LISTSERV was "Graduate Elementary Science Methods" EDCI 671. This class was offered in the spring semester, 1994. This class was open to all graduate education students interested in science education on the elementary, middle level. It was scheduled to meet for 2 hours and 45 minutes on Wednesday evenings for 16 weeks.

The intellectual themes of the class were constructivism and teacher empowerment. The required textbooks were The Young Child As

Scientists: A Constructivist Approach To Early Childhood Science Education (Chaille & Britain, 1991) and Teachers As Researchers: Qualitative Inquiry As A Path To Empowerment (Kincheloe, 1991). Additional journal articles on elementary science education were placed on library reserve. Students were required to write a publishable article on elementary science education, develop and lead a one-hour in-service elementary science workshop, lead a class discussion based on the class readings, undertake an independent professionally enhancing project, and complete a final take home reflection exercise. Weekly topics included the nature of science and elementary science instruction, the history of elementary science education, elementary science curricula, state curricular framework for elementary science, multiculturalism and inclusion in elementary science education, constructivism and elementary science education, and performance-based assessment. As instructor, I gave short lectures on topics, showed videos to augment instruction, led small cooperative group hands-on activities, arranged for guest speakers to lead lessons on multimedia and use of E-mail on the Internet, and modelled the use of a structured discussion technique known as "Learning Thru Discussion" (Hill, 1994). I also encouraged two of my students to explore additional discussion techniques; they selected and modelled a structured discussion strategy for assisting learners construct meaning advocated by Abell (1992).

Study Participants

To document my experience using the class LISTSERV in a graduate science education class, I secured consent from a majority of the class members during the first class meeting (9 out of the 13 students agreed to participate in the study). Non-participants in the study informed me that while interested in the study, their graduate classes and job responsibilities made them wary of committing any time and energy to additional projects. The data from the 9 study participants presented in this study reflected the range of comments expressed by the entire class throughout the semester. Therefore I make the argument that this study does not suffer significantly from the omission of the non-participant's' voices. The 9 participants were diverse in their backgrounds. They included individuals who were white, African-American, international

(Japanese and Korean-American), and practicing elementary and middle school teachers. All were graduate education students in masters and doctoral degree programs.

Use of the Class LISTSERV

I began my new role as a class LISTSERV owner, a new teaching role for me, before the academic semester in which my graduate elementary science class was scheduled. In the fall semester,1993, I read in a newsletter sent out to faculty by my campus Center for Teaching Excellence that the option of class E-mail existed for scheduled classes at my institution. Intrigued with the notion of adding this new feature to my graduate class (I subscribed to several LISTSERVs myself and found them beneficial), I electronically communicated with the campus Computer Science Center (CSC) and asked for its assistance in setting up a class LISTSERV. The CSC informed me via E-mail that it would assist me provided I followed the following guidelines:

1. Obtained administrative endorsement.
2. Was committed to maintaining the list.
3. Would not allow any commercial use of list.
4. Would use the list to advance the educational mission of the university.

The CSC instructed me to ask the Dean of the College of Education for approval via E-mail. I did so. The Dean approved my request on E-mail and sent a copy of the message to the CSC with the directive for it to assist me.

The CSC then informed me that I must name the class LISTSERV and write a greeting. Within an eight character limitation, I named my class LISTSERV GRAD-671. Essential elements to include in the greeting were the purpose of the discussion group, the broadcast feature of messages on the LISTSERV, the criteria of membership, the identification of myself as the LISTSERV owner, and the method of signing-off from the list. Appendix A contains the greeting I wrote.

During the first meeting of my graduate class in the spring semest 1994, I informed them that a class LISTSERV would be a feature of the

7 8

class. I explained it was my first time to use it in a class and that I envisioned it being used in several ways. I saw it being used to extend class discussions beyond our class meetings, to serve as a message board for class information, and to give everyone in the class (including the professor) a hands-on experience using distance learning via an E-mail class. Students expressed interest, especially since the majority commuted to the campus, but revealed that although they all were eligible as students for free Internet accounts only three out of thirteen class members had an account or ever used E-mail. We discussed their need for skill enhancement in the use of E-mail so that we could use the LISTSERV and decided to use part of an upcoming class meeting to address this general need.

To meet this need, I arranged for a member of the CSC to visit my class and give an orientation to communication technology, particularly the LISTSERV, and begin the process of getting them individual computer accounts. My students found the CSC presentation useful. They particularly valued the convenience of holding it during their class time, the expertise of the presenter, and filling in the necessary forms for them to secure private computer accounts. Arranging for the CSC presentation and the processing of my students' computer accounts delayed the start-up of the class LISTSERV for the first three weeks of the semester.

The first LISTSERV assignment I gave my students was to subscribe to the list, read the greeting, and post a short introduction. This took two weeks for all to accomplish. Problems with hardware access particularly delayed many of them who had no computer or modem at home. Several learned how to use the computers at their elementary schools to connect up to the class LISTSERV. A few purchased modems for their personal computers and worked with the CSC in configuring them. Others used the computer rooms at the university before or after class to connect up with the LISTSERV. For those without easy access to the INTERNET. it quickly became apparent that they would be at a disadvantage compared to those who did. I expressed sympathy with their condition, gave suggestions on where other potential computer facilities might be available for their use (including the public libraries), and commiserated with them on the inequities of access.

The first significant step I took in the use of the class LISTSERV to enhance class discussion was to post comments and reflections on class discussions. I also encouraged class members to react to class discussions by posting their own comments. Appendix B contains an example of one E-mail exchange focusing on extended thoughts spurred on by a class discussion on multicultural education.

Students rapidly warmed to this communication feature of the class and began to independently post comments on LISTSERV. In addition, I began to receive private E-mail messages from class members concerning individual questions. After one class meeting was sparsely attended due to inclement weather, I sent out a summary of the class to those who could not attend that prepared them for the next class meeting. This is contained in Appendix C.

The next electronic communication option I provided my class was to communicate with South African university students interested in elementary science education. I obtained their internet addresses from their professor, a NARST colleague in South Africa whom I regularly communicated on E-mail. I explained that this "pen pal" feature of E-mail could be used with elementary science students to collect scientific data or other meaningful data from around the world. Several of my students became regular electronic pen pals with their professional peers in South Africa. They shared in class discussions what they learned from the international connection and how they saw elementary students benefiting from this communication.

After four or five weeks of the class actively using the LISTSERV, the number of messages on the LISTSERV began to decrease in frequency. I sent out messages that drew little, if any response. In talking with a few of my students in the department, I inferred from their comments that the novelty of the electronic communication was wearing off and that the majority of the students during this time of the semester were increasingly focusing on completing the assignments that would impact their grade in their classes.

Interestingly, however, during this quiet period of the class LISTSERV two students put on class in-service workshops for their classmates in the computer room that explored the use of the Internet to access science related resources (content and lesson plans). This workshop

was well received by their classmates who had learned from the LISTSERV experience to access communication technology.

Before the semester began, I decided to devote one class meeting date to an E-mail distance learning class. I scheduled it on the class syllabus the next to last class meeting date to provide time for the students to develop communication technology skills and to give myself sufficient time to think out how to conduct it. As the semester neared an end and my students had acquired the minimum communication skills needed to use E-mail, I had to decide how I could structure the experience so that it would be a worthwhile experience for my students and me. My goals were that my students would respond in some intellectually meaningful way to concepts presented in the class readings and discussions and that it not be a conversation directed solely at me. I wanted to use the two-way communication feature of the LISTSERV to encourage an extended conversation between everyone on the list. To accomplish this I structured the distance class in the following way. I posted three questions on the LISTSERV following our last class meeting before the scheduled distance learning class. I directed my students to respond to the questions anytime before noon Thursday during the scheduled week of the distance learning class. I also directed them to respond to their classmates comments. To do that I asked them to wait until noon Friday of the distance learning class before responding to some of the posted ideas that particularly intrigued them. I informed them that class attendance and participation for that week would be earned by sending the two required electronic messages. At the end of the time allotted, all thirteen students were able to participate in the E-mail class, although the depth of messages varied from brief comments to extensive essays. Appendix D contains my three questions and sample student responses.

When students returned for their last class they were strong advocates for the use of the LISTSERV in a distance learning class. Many expressed that by both making comments and then responding to other's comments, they perceived the potential of communication technology in enhancing intellectual discourse. Several later privately commented to me that it was very meaningful to read the messages of classmates who rarely made extended comments in class, particularly the second language

10   11

international students. The students asked if they could continue to use the LISTSERV during the summer semester. I agreed.

During the summer semester, the LISTSERV had very light traffic. The messages tended to be social, as exemplified by the messages contained in appendix E. At the end of the summer, I informed the CSC to delete all subscribers to the list so that it would be ready for a new class to subscribe to in the spring of 1995.

Student Feedback On the Use of the Class LISTSERV

Throughout the semester, I collected data on student comments regarding the class LISTSERV. These came from ongoing non-structured interviews, E-mail inquires, and an end of the semester questionnaire. Analytic categories that emerged are now presented.

Increased Academic Professionalism

Students commented throughout the semester on how the skills they developed to access the communication technology enhanced their graduate studies. They perceived this aspect of the class as particularly going beyond the "typical fare" of graduate classes and providing a skill they would continue to develop upon completion of the class. Learning how to use computer technology to access ERIC away from the campus library and simply experiencing the Information Superhighway were cited often as academic benefits.

Sample student comments:

Student 1:

I am now able to access ERIC from my home. That changed my life around comprehensive examination time. I'm not sure that I would have discovered this luxury without this class.

Student 2:

I felt that the LISTSERV itself and the class conducted via LISTSERV was a true success. The entire class developed the skill of using and effectively communicating on the LISTSERV and many of us remain inspired to learn more.

Student 3:

I felt that the LISTSERV was an effective way to implement the use of technology in a graduate course.

Student 4:

The inclusion of the LISTSERV in this class was a wonderful learning opportunity. It added to the content of the class by having us experience a sense of networking. I think use of the LISTSERV in the future should be included in all graduate courses.

Student 5:

The use of electronic communication is something that I will continue to use long after participation in the class.

Student 6:

I feel that our class greatly benefitted from using the LISTSERV. For many of us, it was an introduction to E-mail. Prior to the class, I imagine most people had heard of computer mail,however it remained aloof to them. With the experience that we have gained, we will now be able to pursue our individual uses of E-mail.

Student 7:

To me, the LISTSERV added to the "typical fare" because I had not been exposed to it before.

Increased Communication in Graduate Class (Community Formation)

One benefit of using the class LISTSERV that all the students referred to was the enhancement in communication it provided between each other and with me, the professor of the class. The consensus was that the class communication in cyberspace created a virtual community which promoted the development of a sense of camaraderie in a graduate class that met only once a week.

Sample student comments:

Student 1:

I believe the E-mail encouraged a stronger camaraderie in the class. It was an extra way to communicate with and support each other.

Student 2:

Using LISTSERV to communicate is a wonderful idea. We can transmit messages without meeting each other, e.g. postponing the final project, giving the recipe or only saying hello to everyone.

Student 3:
The LISTSERV enhanced the fare of a typical grad class by offering another way of communicating with peers and the professor. Also, it facilitated the open sharing of information and ideas.

Student 4:
I encourage you to continue to the use the E-mail in your graduate level courses. It is a valuable recourse many tend to be afraid of until they actually use it. For our class, it served as an alternative form of communication which many utilize these days.

Student 5:
The LISTSERV allowed the class to discuss subjects that could not be expanded in class due to time constraints.

Student 6:
I find the power of E-mail to be able to 1) communicate with colleagues and friends that I do not see on a routine basis and 2) relay short messages to those people who I see more often.

Distance learning

I was particularly eager to hear my students' comments regarding the distance learning class. As a science educator who uses cooperative hands-on science activities extensively in undergraduate and graduate classes, I wondered how students reacted to a class solely devoted to textual discussion and participation. Interestingly, not a single student referred to this missing aspect of the distance learning class. Instead, they extolled the "synergy" and "forced" participation of all members of the class. The E-mail class served as a type of performance-based communication technology experience for most in the class. Since they were able to perform the structured tasks I gave them, they felt competent in communication technology.

Sample student comments:
Student 1:
The LISTSERV class was neat. The synergy that came from all of our ideas and all of our intelligence was overwhelming! I enjoyed it!

Student 2:

In the LISTSERV class, you asked us to answer the questions you put on it. Different from class discussions, this forced everyone to think about them and share their opinions with the other. By doing this, I knew other people's perspectives and I could go back and re-read them again.

Student 3:

I liked the LISTSERV class at the end of the semester, and I would suggest that be done in the beginning of the semester instead. The participants would be forced to use the E-mail from the very start, and will see the ease of it all.

Student 4:

The LISTSERV class was very beneficial. Some students probably would not have used the LISTSERV at all if not for this opportunity (I may have been in this group!).

Student 5:

I liked the class where we used the LISTSERV during one its sessions. It was interesting to read the different comments and responses back to it through the computer.

Student 6:

I found the LISTSERV class itself to be interesting and I believe our class became more cohesive as a result.

Increased Teaching Professionalism

Several of the practicing elementary teachers commented on their perceptions of how the communication technology could enhance their teaching professionalism. I was pleased to hear one refer to it as another element allowing her to continue down the "path to empowerment" in her teaching context.

Sample student comments:

Student 1:

I see the E-mail skills I gained as personally leading me along the path to empowerment at my school.

Student 2:

The contacts and information available on it should be used by all, including students at the elementary, middle, and secondary levels.

Student 3:

My final reaction to the LISTSERV is that is was a very interesting and valuable experience. It helped to expose to us an aspect of modern technology that can integrated into the classroom.

Concerns With the Use of LISTSERV

Several students expressed reservations concerning the use of the class LISTSERV. The problematic nature of lack of easy computer access, the general discomfort with computer technology and the potential increase in work in graduate classes if all used LISTSERVs were mentioned as concerns they held about the class LISTSERV.

Sample student comments:

Student 1:

The only way I can foresee the LISTSERV could detract from a grad class is if it was used in every class. Part of the fun experience in EDCI 671 was the novelty of using E-mail. I'm sure this would wear off if it were part of every class. Also, for those of us either without access to a computer at school (on our desks) or a modem at home, accessing the system was at times problematic.

Student 2:

I have mixed feelings about LISTSERV. In a graduate class conducted on the constructivist epistemology, we should make use of technology. Considering my distance from campus it was a great way to communicate. However, the evening of the LISTSERV class, I had difficulty sending a message. Each time I tried to send a reply, my connection disconnected. I felt left out, since I didn't reconnect until days later. As far as using it in place of class, I'm not convinced that was beneficial to me.

Student 3:

At first, I did not like the idea of getting [electronic mail] much less using the LISTSERV myself, but the more I used it the more comfortable I became.

Student 4:

I would not encourage using more than one LISTSERV class a semester.

Instructor Insights

I discovered that my professional enhancement revolved around a new teacher role, that of a LISTSERV owner. The more prominent insights I gained from this teacher experiment are now presented.

1. Being a class LISTSERV owner required me to develop new computer skills and increase my technology knowledge base.

To create a class electronic discussion group, I had to learn what communication options existed and how they differed. I learned how to set-up and maintain a class LISTSERV. I also learned how to access archived messages and to use other features of the LISTSERV (including obtaining lists of subscribers).

2. Being a class LISTSERV owner required me to develop new pedagogical skills, particularly in facilitating class LISTSERV discussions.

Throughout the semester, I had to continuously orchestrate the use of the class LISTSERV by actively posting messages, encouraging my students to participate, and contriving situations for all my students to use the technology to communicate with each other. I found I had to be especially sensitive to the danger of developing a discussion group that directed all of its comments to me, the professor. Surprisingly, I found that fundamentally the social rules and conventions of graduate classes also extended to the cyberspace environment. For example, while I signed all messages with my first name or initials, my students preferred to address me as Dr.-- and excessively referred to me in their posted messages. Students perceived me as evaluating their participation on the list and continually postured to me in their discussions. This continued even after I informed the class that the class LISTSERV was a communal environment all could develop and use. Also, since I was responsible for the conversation on the class LISTSERV, I had to continuously monitor it throughout the semester. Fortunately, no one "flamed" anyone else or misused their computer addresses, but the potential kept me alert to intervening appropriately to guard individual rights.

3. Being a class LISTSERV owner enabled me to combine teaching and research in a meaningful way.

Action research and teacher empowerment were two central themes of the class. The use of the class LISTSERV enabled me to model to my students one example of this type of research. Students found it interesting to see the professor of their class collecting data and mulling over the benefits and negatives of a pedagogical strategy (the class LISTSERV).

Conclusion

The research field of technology infusion has developed a taxonomy of users of technology (Achenback, 1994). The categories are Innovators (2.5% of the population who develop the technology), Early Adopter (12.5% of the population who believe technology is beneficial and who actively search out new technology to use), Early Majority and Late Majority, (70% of population who will use technology when it is non-perplexing and inexpensive), and Laggards (15% of population who actively resist using new technology). As typically a technological Early to Late Majority member in my private life, I found myself thrust in the role of a communication technology Early Adopter in my professional identity by using a class LISTSERV in my graduate elementary science methods class. I benefitted professionally from the transformation.

As eloquently articulated by my class members, the class LISTSERV provided another facet of intellectual stimulation not typically found in graduate science education classes. I believe it did so because it created a virtual community that enhanced the physical community's communication. I believe the class LISTSERV was a worthwhile innovation since it encouraged both student and teacher professional enhancement.

Currently, besides for instructor willingness to include communication technology in academic classes, the primary constraint to the use of a class LISTSERV is access. Access is limited due to hardware availability and user (instructor and students) computer skills. Access is increasingly being addressed, however. For example, the state of Maryland is the first state to now offer free access to the internet at local public libraries (Powledge, 1994).

Communication technology, as evidenced by the telephone, is both beneficial and detrimental (it brought people together over the telephone but alienated them physically). The full story is still to be told in how communication technology will ultimately affect graduate science education method courses. The benefits of more participation by everyone and the options it provides of promoting intellectual discussion is welcome; the negative potential of further separating the technology haves from the technology non-haves is not.

A further issue that warrants more consideration which comes from this action research study is the use of communication technology for distance learning in science methods classes. Maintaining a commitment to cooperative group, hands-on minds-on learning in science education is made problematic by conducting an entire science methods class solely on communication technology. Perhaps one solution to this problem will be to see both real-life and virtual interactions as necessary facets in a successful science methods class that achieves a true blend of physical and mental knowledge construction. Deciding when to use real-life or electronic communication interaction strategies will become a distinguishing decision-making challenge of the present generation of science teacher educators.

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Appendix   A

Date: Wed, 9 Feb 1994 10:57:27 -0500
From: "BITNET list server at UMDD (1.7f)" <LISTSERV@umdd.umd.edu>
Subject: Welcome to the GRAD-671 Discussion List
To: Randy McGinnis <James_R_McGINNIS@umail.umd.edu>

Welcome to GRAD-671. You are now successfully subscribed to the
discussion list for graduate students at The University of Maryland at
College Park registered for EDCI 671: Elementary Science Methods.
I established this list to facilitate communication between us in the class
and to explore new methods of communication.

You are welcome to use this as a way to post messages to us, to ask
questions, to respond to questions, and to inform us of things in the world
relating to teaching science on the elementary school level. I will regularly
contribute to this discussion and will post information concerning our class.
Two warnings before you begin sending messages:

1. You cannot post to the list anonymously.
2. It is easy to sound abrupt when dashing off notes like this, so try to
remember to be considerate and polite to all of us in this environment.

Now that you are on this list, I would like for you to post a greeting to us
so that we begin our discussion with you included.

Randy McGinnis, instructor of EDCI 671.

Appendix B

Date: Wed, 13 Apr 1994 14:29:00 EDT
Reply-To: Discussion List For EDCI 671 <GRAD-671@UMDD.BITNET>
Sender: Discussion List For EDCI 671 <GRAD-671@UMDD.BITNET>
From: [deleted]
Subject: Re: greeting
In-Reply-To: [deleted]

Hello Everyone,

I am testing the mailing system. I have not received any mail from the list
serve lately. I am afraid that for some reason I have been removed from
the group. Please regard this as a test run.

Have a good day, G

===Date:
Wed, 13 Apr 1994 20:09:00 EDT
Reply-To: Discussion List For EDCI 671 <GRAD-671@UMDD.BITNET>
Sender: Discussion List For EDCI 671 <GRAD-671@UMDD.BITNET>
From: jm250 <James_R_McGINNIS@UMAIL.UMD.EDU>
Subject: Re: greeting
In-Reply-To: G

>G, glad to see you are encouraging us to use the listserv. Let's see what
messages come in for us all to think about. Of course I sit here thinking
about the multicultural discussion we had tonight. The dilemma of
considering the individual as a self-directed entity and not a member of a
"culture" is so engrained in us in teaching. However, can we deny the
impact of background factors on what makes us us and how that dilemma
of considering the individual as a self-directed entity and not a member of
a "culture" is so engrained in us in teaching. However, can we deny the
impact of background factors on what makes us us and how that surely
must influence our elementary students too?   RM

==
Date: Th·· 14 Apr 1994 08:47:00 EDT
Reply-To: Discussion List For EDCI 671 <GRAD-671@UMDD.BITNET>
Sender: Discussion List For EDCI 671 <GRAD-671@UMDD.BITNET>
From: [deleted]
Subject: Re: greeting
In-Reply-To:

G, If you get this message, your account is still working!!

==

Date: Sat, 16 Apr 1994 21:53:42 -0400
Reply-To: Discussion List For EDCI 671 <GRAD-671@UMDD.BITNET>
Sender: Discussion List For EDCI 671 <GRAD-671@UMDD.BITNET>
From: [deleted]
Subject: Re: greeting

G, received your test message ....
==Date:
Tue, 19 Apr 1994 13:43:00 EDT
Reply-To: Discussion List For EDCI 671 <GRAD-671@UMDD.BITNET>
Sender: Discussion List For EDCI 671 <GRAD-671@UMDD.BITNET>
From: G
Subject: Re: greeting
In-Reply-To:

>>I am glad to here from everyone. Thank you for confirming that I am
still in the listserv. I have copied the message from Dr. McGinnis and have
included a response to share with everyone.
[message deleted--it is printed in its entirety up above in this appendix]

Dr. McGinnis,
I am not advocating that we deny the impact of background factors on
people. But I think that background factors are individually interpreted.
Being a southern has had an important impact on my development but the
nature of the impact is unique to me - I don't think southern background
factors are generalizable.

As we are discovering in educational research- learning is highly
contextualized. I believe that background factors are highly
contextualized as well-- the individual being the context (important point-
nott he individual defining the context but the individual is the context).
Thus every background factor whether it be economic status, ethnic
background, geographical upbringing, cultural heritage, etc., can only be
understood in from the context of the individual.

Enough blabbing on my part. Anyone else have something to add?

Appendix C

Date: Thu, 3 Mar 1994 09:38:00 EST
Reply-To: Discussion List For EDCI 671 <GRAD-671@UMDD.BITNET>
Sender: Discussion List For EDCI 671 <GRAD-671@UMDD.BITNET>
From: jm250 <James_R_McGINNIS@UMAIL.UMD.EDU>
Subject: Last night's class at the university

For those of you not able to attend class last evening, this is an update.
The nine brave souls who came decided that we should press ahead with
the discussions from our readings. Gina S. led the group in Chapter one of
Kincheloe's book. Betty Davis then led the group in discussing chapters 7 &
8 of the Britain and Chaille book. Both distributed outlines based on the
Learning Thru Discussion steps to add structure to the discussion. Contact
them for further information on how the discussions developed. I can
share that the concept of "empowerment" became a dominant
referent which will continue to challenge us.
   Next week, I will present my in-service teachers workshop next week in
addition to sharing another S-T-S activity.
The Multicultural topic (life and earth science) will be combined on March
23.
Also, please make sure that you send me your theory into practice article
this week if you have not turned it in already. Randy M.

Appendix D

Date: Mon. 25 Apr 1994 09:45:00 EDT
Reply-To: Discussion List For EDCI 671 <GRAD-671@UMDD.BITNET>
Sender: Discussion List For EDCI 671 <GRAD-671@UMDD.BITNET>
From: jm250 <James_R_McGINNIS@UMAIL.UMD.EDU>
Subject: E-mail class structure

This week we will try out an alternative teaching/learning environment
for this graduate elementary science methods class. It will be a class
discussion in two stages (an individual response to my comments and
questions followed some days later by a reaction to all received comments
from those of us on the listserv.
Directions:
1. Individually respond before noon Thursday, April 28 to the initial
discussion questons, statements. Note: Send your comments to the
listserv, not to my personal e-mail address, so all can read your thoughts.
2. Between Friday April 29 and noon Wednesday May 4, read over the
comments made by all the participants on the listserv and
post a second message to the listserv on your reactions to participant
comments that particularly intrigued you.

Questions/Statements:

1. Reflect on the various readings in this class (papers on reserve, the two
textbooks, outside readings) and cull out an idea to share which intrigues
you that relates to teaching elementary science. Provide some background
on why your selected idea is meaningful to you.

2. From your perspective and context, what new research/curriculum
development relating to elementary science methods do you think would
expand the frontier of knowledge and be the most helpful in this field
(elementary science education)? Explain.

3. Think back over this class and briefly share a vivid memory of an
experience you had in this course this semester.

4. Write out one burning question you would like Joe Kincheloe to respond
to during his discussion with the class [Note: Kincheloe agreed to talk with
students in EDCI 671 in a telephone conference call)

I look forward to your participation in this E-mail class!
Randy McGinnis

Appendix E

Date: Tue, 14 Jun 1994 21:51:22 -0500
Reply-To: Discussion List For EDCI 671 <GRAD-671@UMDD.BITNET>
Sender: Discussion List For EDCI 671 <GRAD-671@UMDD.BITNET>
From: [deleted]
Subject: Paris has arrived!

Hello everyone,
Paris has finally arrive!   After a two day induction (due to his two
weekpostdate) Paris made his grand debut on the evening of June 8th.
Parents and new son are doing well.   My mother came down to help us out
and has just left tonight.   We no longer now have someone to hand the
baby to in the middle of the night when he won't go to sleep.   I think
We're in for a tiresome night.   But in general, he doesn't cry much.   He just
likes to stay up (more or less) for two hours at a time - latent burps.   I
never realized how much time infants demand.   The days have flown by
quickly.   Almost forgot - his statistics: 8 lbs 5 oz, 20 and 1/4 inches long,
lots of medium to dark straight hair.   It's too early to tell who he looks like
(if anyone other than himself), but he does have my quirky ears and
identical birthmark at his hair line on the back of his neck.   Being new
parents brings out a lot of new emotions.   It's a delightful beginning of
extending our family.
We haven't put Paris in the playyard yet (We haven't even put him in his
crib!).   The bassinet is just his size. [note: students in EDCI 671 contributed
toward the purchase of the playyard]
Wishing you all a most enjoyable summer
****
Date: Wed, 15 Jun 1994 08:49:00 EDT
Reply-To: Discussion List For EDCI 671 <GRAD-671@UMDD.BITNET>
Sender: Discussion List For EDCI 671 <GRAD-671@UMDD.BITNET>
From: [deleted]
Subject: Re: Paris has arrived!
In-Reply-To: [deleted]

Congratulations!!   Too bad you can't send pictures over the internet!
We will all have to have a reunion sometime and meet Paris.   Best of luck!
****
Date: Wed, 15 Jun 1994 09:35:00 EDT
Reply-To: Discussion List For EDCI 671 <GRAD-671@UMDD.BITNET>
Sender: Discussion List For EDCI 671 <GRAD-671@UMDD.BITNET>
From: [deleted]
Subject: Re: Paris has arrived!
In-Reply-To: [deleted]

Welcome Paris. It is about time.
Glad to here you are d ing well. Has Paris displayed any great
mathematics, statistics and science skills yet... and have you been doing
your early childhood science activities. It is never too early to
start. You can also start collecting data for your dissertation too.
But seriously thank you for mailing the great news. Keep us informed of
all the neat stuff Paris is doing. Hope to see you around next semester.

P.S. Try and keep Paris cool and explain to him that life isn't going to be
this hot.
****

Date: Wed, 15 Jun 1994 10:13:00 EDT
Reply-To: Discussion List For EDCI 671 <GRAD-671@UMDD.BITNET>
Sender: Discussion List For EDCi 671 <GRAD-671@UMDD.BITNET>
From: [deleted]
Subject: Re: Paris has arrived!
In-Reply-To: [deleted]

Congratulations!!!! So now you can come out to one of my ballgames. I
hope things are going well (I know you are not sleeping much). I'd love to
come see the guy when you and your husband are up for company. Keep
in touch!!