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Student teachers on LabNet: Linking preservice teachers with a professional community

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ABSTRACT

This article describes our preliminary exploration of a use for telecommunications in preservice teacher education. During the 1993 to 1994 school year, eleven student teachers at Tufts University participated in LabNet, a project at TERC to develop a community of science and mathematics teachers who share an interest in "project enhanced learning" and who communicate with each other through bulletin boards and electronic mail (Spitzer & Wedding, 1995). This article reviews the student teachers' involvement in LabNet to suggest it benefited them in several ways. In particular, it provided them specific, practical ideas and advice, with respect to student projects and otherwise; a sympathetic and appreciative forum in which to discuss their own ideas and experiences; and the general support of a progressive, active group of teachers for experimenting with innovative methods. The student teachers' participation seemed to benefit the LabNet community as well, stimulating topics of conversation veteran teachers might not otherwise have explored. Finally, we suggest, this form of contact among intern and practicing teachers has further potential to provide continuity between preservice and inservice community and professional development.

INTRODUCTION

It has often been observed, formally and informally, that there is a broad gap between what novice teachers experience in university teacher preparation and what they find in the schools (e.g. Smylie, 1989). At the university, educators prepare student teachers to be "change agents" in school communities that can be disinterested and unresponsive to innovation; at the schools, seasoned teachers welcome novices to the "real world," in contrast to the "theoretical world" of teacher preparation programs. This problem has been widely discussed, and there has been substantial progress toward addressing it through a variety of approaches, including case methods (Shulman, 1992), new philosophies on the relevance of theory to instruction (Peterson, 1993), and the integration of the practices of research and instruction (Lampert, 1990).

This article describes our preliminary exploration of a use of telecommunications as another way to help to close the gap between teacher preparation and professional practice. Beginning in the 1992-1993 school year, three cohorts of science and mathematics student teachers at Tufts University participated in LabNet, a progressive community of science and mathematics teachers who communicate with each other primarily via computer and modem, through bulletin boards, electronic mail, and real-time electronic "chats."

There can be two general advantages to this use of telecommunications. First, it can provide contact between university educators and an innovative professional community, helping to ground the philosophies espoused at the university in the practices of that community. To the student teachers, the university educator can in this way serve, in part, as a representative of an association of "real" teachers. Second, it can provide contact directly for the student teachers to a community that, with its progressive objectives and highly-qualified membership, they may enter truly as novices, rather than as "change agents." As well, the student teachers could remain with the electronic community as they enter the profession and move to their first positions.

The purpose of this article is to discuss a group of student teachers' participation in LabNet and its influence on their preparation. The article's organization is as follows: The next section, "Telecommunications, teacher education, and LabNet," briefly describes the LabNet project and reviews other uses of telecommunications in teacher education. "Student teachers on LabNet" then describes the results of one year from this experiment in pre-service teacher education. The final section summarizes the article, offers conclusions, and discusses questions and future directions.

TELECOMMUNICATIONS, TEACHER EDUCATION, AND LABNET

LabNet is a project at TERC, originally funded by the National Science Foundation, to develop an electronic community of science and mathematics teachers (DiMauro & Gal, 1993; Ruopp, Gal, Drayton, and Pfister, 1993; Spitzer and Wedding, 1994). Since its beginning in 1989, LabNet has been designed to promote "Projects Enhanced Science Learning" (PESL), the use of student projects in science education, and its design is premised on the notion that learning takes place within communities of practice (Lave & Wenger, 1991; Pea & Gomez, 1992). LabNet seeks to establish a PESL community of practice, to support lifelong learning and development of its members as well as to provide for the education of new members. In the 1992-1993 school year, we began to experiment with the use of LabNet as part of pre-service science and mathematics teacher education at Tufts University.

Although, like LabNet, most uses of telecommunications for teachers have been directed primarily at in-service teachers, there have been a number of projects in pre-service teacher preparation and graduate credit programs (Honey *et. al.*, 1994). By and large, the emphases in these projects have been on telecommunications (1) as part of

new teachers' general technological literacy (Dickey and Dickey, 1995), (2) as pedagogical tool for students use within the classroom (Barenfeld, 1993; Julyan & Wiske, 1994), (3) as a means to overcome practical obstacles of supervision in rural settings (Hedberg, & Harper 1993), and (4) as a means to facilitate communication among student teachers and faculty within a given program (Wright, W. 1992; Levin, et al., 1993).

Much of what we planned in our project was similar to these efforts. We introduced the student teachers to the network through their seminar at Tufts, "Practices of Teaching Science and Mathematics," and we hoped that it would benefit them to have access to each other and to their professor (David) on a daily basis from their homes.

We believe our work is unusual, however, with respect to our objective to initiate student teachers as novice members of the LabNet teacher community. It is similar to the Beginning Teacher Network (Beals, D., 1992) at Harvard University in its objective to establish contact for pre-service teachers to an in-service community they may remain with as they enter the profession. Unlike that project, however, LabNet focuses on science and mathematics teaching, is not restricted to graduates of any particular program, and is designed specifically to promote projects-oriented approaches to education.

The purpose of the present article is to present results of the student teachers' introduction to the LabNet community. The following section reviews the nature and extent of the student teachers' participation in LabNet; indications of an influence of that participation on their developing philosophies and practices; and possible influences on the LabNet community.

STUDENT TEACHERS ON LABNET--A CASE STUDY

BACKGROUND

When the first group of student teachers joined in January, 1992, LabNet was undergoing a substantial reorganization, and there was very little activity on the community boards.[1] The student teachers' participation was limited almost exclusively to communication by electronic mail among themselves and David. The third year began another period of transition for LabNet; as well, the Tufts cohort was unusually small. For these reasons, we will concentrate on the experiences of the student teachers during the second year, 1993-1994.

There were eleven student teachers in 1993-1994. Seven were preparing to teach mathematics, three biology, and one physics. All were enrolled in David's seminar at Tufts, "Practices of teaching science and mathematics," which met every Wednesday evening for two and one half hours There was also an experienced chemistry teacher enrolled in the seminar, and she too became a member of LabNet.

Most of the student teachers' work on-line involved the Student Teachers Board, a private space accessible to the participants in the Tufts seminar but not to the general LabNet community. The assignments in the seminar included posting and discussing, on the Student Teachers Board, stories about the participants' experiences in their classrooms (similar to cases, as described in Shulman, 1992). This was one of a number of respects independent of the LabNet community in which the space on-line enhanced the seminar at Tufts.

Our purpose in this article, however, is to discuss the student teachers' connection to the community of teachers in LabNet and its influence on their preparation. That connection involved the LabNet community boards, accessible to all LabNet members, and, to a much smaller extent, exchanges by private electronic mail. The community boards included the "Community Forum," for issues of common interest across disciplines, as well as a series of "Special Interest" boards, mostly focused on particular disciplines (e.g. biology, mathematics, physics). (See DiMauro & Jacobs, 1994; Spitzer & Wedding, 1994 for details about the design of the LabNet area on America Online.)

METHOD

This case study is based primarily on data from logs of the LabNet message boards during the Tufts University spring semester, from February through May, 1994. We examined the logs of the community boards to identify 51 messages that were either written by a student teacher and directed to one or more LabNet teachers (24) or written by a LabNet teacher and directed to a student teacher (27). Below we review the substance of these messages and present excerpts to illustrate the ways in which student teachers exchanged ideas and advice with experienced LabNet teachers.

That most of the student teachers' work on-line occured in the Student Teachers Board was reflected in its size: by the end of the semester it had 411 posts, including seminar assignments as well as messages concerning course and program administration, scheduling, and casual conversation. We examined the logs of these messages to identify 42 that pertained to the student teachers' use of projects or other ideas from LabNet in their internships. Below we review the substance of these messages and present excerpts, to suggest that participation in LabNet had an influence on the student teachers' work.

Finally, we examined the logs of LabNet discussions after the end of the school year, to identify any further discussion between (then former) student teachers and experienced LabNet members. We present excerpts of messages from an extended discussion initiated by a student teacher, to suggest that the participation of novices benefited the experienced teachers as well.

Secondary sources of data were records of private electronic mail, an end-of-year seminar conversation with the student teachers about their use of LabNet and their impressions of its influence on their teaching, comments from their course evaluations of the Tufts seminar, and, finally, comments within informal correspondence. Our use of this data was peripheral and will be evident below.

PARTICIPATION IN COMMUNITY DISCUSSIONS

Like most LabNet members, and like most members of other electronic communities (Jacobs & DiMauro, 1995; Rheingold, 1993), the student teachers mainly participated in LabNet community discussions as readers. Still, of eleven student teachers in the second year, seven posted at least one message to the community boards.

In this section, in order to illustrate the ways in which the student teachers participated, we present excerpts of messages they posted to the community boards. Among those who posted messages, there were four whose contributions stood out: Michael, who offered ideas and descriptions of his own teaching; and Bonnie, Sherman, and Ryan, who used the network to solicit advice. [2]

Michael was earning a credential in high school mathematics. He took a strong interest in LabNet and its philosophy, and he regularly read on-line messages. For example, he followed avidly one philosophically-oriented discussion, titled "Issues in education," including posting a message to the folder when the discussion had stalled to ask the moderator to rejuvenate it. In other discussions, mostly in the mathematics special interest area, Michael contributed actively, often taking the role of moderator himself.

He initiated a discussion in the Mathematics special interest area, titled "Math problems, some favorites," to promote

an exchange of interesting problems to pose to students; his opening post presented a problem he had found interesting to explore:

> Subj: a venn diagram puzzler 94-03-04 19:10:23 EDT
>
> From: Michael Stone
>
> Draw a single circle of the type we all love to use when making venn diagrams and notice that the interior of the circle represents a single region. In effect, c1 = r1 ... one circle gives one region.
>
> Draw a second circle which overlaps the first. Then c2 = r3 . . . two circles give three regions.
>
> Draw a third circle which overlaps the first two. Then c3 = r7 . . . three circles give seven regions.
>
> Draw a fourth circle which overlaps the first three. Then c4 = r13. . . .
>
> The task is to find how many regions result from five overlapping circles, six overlapping circles and so on.
>
> The drawings associated with the above question are fun, students like them. The task of determining the pattern in the above numbers is also fun, even if frustrating. The problem is well used as an in class exercise, or as homework. I generally introduce the problem without too much fanfare, hope the problem hooks them, and then I leave it for homework. To date, I have seen three successful solutions, one perfect equation, and one equation, a quadratic, that works always, except when there is just one circle.
>
> Also, as of now, I have only used the problem in a lower level class of juniors and seniors.

Michael thus took considerable effort to share his idea for a classroom activity and to elaborate on his approach. The next day a LabNet teacher responded with a problem of her own, an unusual derivation of pi, and Michael had launched a modest discussion.

More than any other student teacher, Michael asserted himself as a contributing member of the LabNet community, seldom identifying himself as a student teacher, and sharing rich descriptions of his classroom. In one message, he responded to a LabNet teacher who had posted a note asking for ideas to use in a lesson on curve-fitting:

> Subj: open ended curve project 94-05-08 00:16:43 EDT
>
> From: Michael Stone
>
> I gave an open-ended assignment recently asking that students try to think of two things that may be related, state a hypothesis of relationship, do a survey and then present their results. The results were fun. Several students looked for a relationship between time spent studying and grades. One result plotted well as a square root function. Basically students who studied more earned higher grades, but only to a point. Eventually a threshold was reached where more study time didn't result in a better grade. Another group found a very linear relationship between height and weight for medium-build high school students. They got the idea from a health text which suggested the relationship existed. A third group went a little wild and tested the relationship between the number of belches that occur in an hours time as measured against the number of slices of pizza eaten and soda drunk. I was a little suspicious of the results, which were quite linear, because they claimed one person ate eleven slices of pizza and belched a total of eighteen times. Their claim was that if I knew their brother, then I wouldn't be skeptical. They claim to have pictures of the event. It seems they had a very good time. In any event, the presentations were very well done particularly with respect to the creativity they showed in their own experiment design.

Michael's posts, it is interesting to note, provided more details about his classroom activities than is typical on LabNet. Often, more experienced teachers choose not to share details of their classroom activities. For Michael, who came to the program with his own progressive ideas and agenda, LabNet seemed mainly to provide an outlet, a place to share his thoughts with sympathetic correspondents.

For other student teachers, including Bonnie, Sherman, and Ryan, LabNet served more often as a source, a place to look for ideas and advice. Bonnie started a folder in the mathematics special interest area to solicit suggestions for project ideas. She had elsewhere identified herself as a student teacher, and she framed her request accordingly:

> Subj: Need project ideas 94-02-19 12:27:09 EDT
>
> From: BBO
>
> My cooperating practitioner has suggested that we figure out a good long-term-type project (maybe 2-4 weeks?) for our 8th grade algebra kids. I'd really like to think of something myself, rather than just carry out her ideas, so I was wondering if anyone could suggest some good project ideas. Ideally, I'd like the end-result to be something that can be displayed somehow.
>
> Thanks,
>
> Bonnie Bloom

Bonnie's request, unfortunately, did not generate much advice: Two LabNet teachers posted messages to say that they also were interested in mathematics project ideas; a third posted an idea for a project using realtors' listing books. That Bonnie received few suggestions was due in part to the fact that, at the time, there was only a very small group of mathematics teachers in LabNet; it may also have been due to the generality of her request (Gal & DiMauro, 1993).

Sherman's post, in the Earth Science area, was more specific and more successful:

> Subj: Oceanography 94-03-07 21:38:27 EDT
>
> From: SHERMAN6730
>
> Hi , My name is Sherman Jones and I am Student teaching this semester at _____ High School MA and attend Tufts U. The class I am teaching is Oceanography and there is a wide variety of students in it. Most are in it to get desperately needed science credit. Some are E.S.L. and at least 2 are highly motivated and bored. Any ideas about activities I might use to spark some interest? There is a lot of resistance to being pushed to far but the students are also very sensitive to demeaning busy work. Any ideas would be very much appreciated
>
> Sherman

DM responded quickly to Sherman's message and promised further response later:

> Subj: Re:Oceanography 94-03-11 06:21:06 EDT
>
> From: DM_____
>
> Sherman,
>
> I used to teach Physical Oceanography to grades 10 - 12. Let me check my files and get back to you for some project type stuff. Most of what I have runs 2-4 periods. Do you have aquaria in the room?
>
> Subj: Re:Oceanography 94-03-11 21:35:07 EDT
>
> From: JH_____
>
> I haven't taught oceanography but how aboout the old PSSC physics labs with the ripple tank? Or how about using a sonic range finder to demo mapping ocean floor?
>
> Subj: Re:Oceanography 94-03-11 22:48:23 EDT
>
> From: Sherman6730
>
> J___, the ripple tank sounds like a good idea. one of the better students has expressed interest in an independent project about waves maybe I can incorporate the two. Much of the class seems to be tiring of the physical oceanography or perhaps the way its being taught. I have already done a mapping exercise, but I think the use a sonic range finder would have made it better Thanks for the ideas.
>
> D___, There is a fresh water tank (25 gallons) that has several different types of fish, a recently arrived crayfish, and some snails. Maybe I will see if my practicum teacher would be interested in starting a salt water tank. Thanks for the help
>
> Sherman

DM returned with a suggestion for "beach in a box" investigations and the design of a bubble habitat; BK suggested contacting Project Oceanography at the University of Connecticutt; and Doug Miller, who had joined LabNet as a student teacher the previous year, offered the idea of building a life size models of a blue whale. Sherman closed the folder with a post to thank everyone for their help and to give his home mailing address, the "place to send neat stuff."

Ryan, inspired by the success of Sherman's request, posted his own the next week and received similar responses:

> Subj: A call for ideas 94-03-13 18:27:35 EDT
>
> From: RYAN FIELDS
>
> Hello,
>
> My name is Ryan Fields and I am a student teacher in _____, Massachusetts. My Earth Science class is college prep level. I am desperate for ideas that will excite these kids about weathering and erosion. We may be able to take a field trip, so if anyone is familiar enough with the area, field trip ideas would be welcome as well.
>
> Thanks in advance for your help.
>
> RYAN FIELDS

Five LabNet teachers responded to Ryan with suggestions for projects and places to look for resources.

These excerpts illustrate the ways in which the student teachers conversed with LabNet teachers on the community boards. Based on the student teachers' comments at the end of the year, however, this active participation was not typical: More often they simply "lurked," reading LabNet discussions without contributing to them.

PRIVATE COMMUNICATION WITH LABNET TEACHERS

In addition to posting on the community boards, the student teachers interacted with LabNet members through private electronic mail. It may take more effort to arrange such private correspondence, because sending an e-mail message means singling out a recipient. We know of only a few instances of e-mail between student teachers and LabNet members. Most of these were from the first year and can be traced back to initial, in person contacts during a workshop for LabNet "teacher moderators" in the fall of 1992.

By way of introduction to LabNet, we invited the student teachers to have dinner with the teacher moderators. Two biology student teachers met Donna Holmes, a LabNet member and teacher moderator, and they corresponded regularly with her for the rest of the year. This dialogue had a strong influence on the student teachers: Donna's ideas, including an "evolution game" to simulate the process of selective advantage, contributed to their work on a curriculum design project and later to their student teaching. One of the student teachers continued to correspond with Donna during her first year of teaching. Other instances of introductions leading to discussion included a brief exchange of mail, after an electronic introduction by David, between William Spitzer, then LabNet's director, who holds a doctorate in oceanography, and Sherman, the student teacher who began the "Oceanography" folder.

We have reviewed the ways in which the student teachers interacted with the LabNet community. In the following sections, we will look at (1) the influence of this interaction on the student teachers' views and methods; (2) the influence of the student teachers' participation on the LabNet community; and (3) their limited involvement in LabNet after their student teaching.

INFLUENCE ON STUDENT TEACHERS' VIEWS AND METHODS

In this section we review informal indications that the student teachers were influenced by the LabNet philosophy in their student teaching. We draw principally on stories and discussions from the private Student Teachers Board.

Seven of the eleven student teachers explicitly considered using projects in their student teaching. Vicky and Sherman both solicited suggestions for projects in the Mathematics and Earth Science special interest boards, respectively, but,

although both experimented with some non-traditional methods such as cooperative learning groups, neither implemented any of the suggestions they received for projects. Both Vicky and Sherman may have been inhibited by the traditional settings of their placements and orientations of their supervising teachers (referred to at Tufts as "cooperating practitioners" or "co-ops"). (Sherman later reported that he used LabNet-style projects in his first year of teaching.)

Five of the eleven student teachers (Michael, Miranda, Bonnie, Ryan, and Annie) did experiment with a projects approach during their student teaching. Michael's post about an open-ended curve project, quoted above, was one example.

Of all the cooperating practitioners, Miranda's was closest in philosophy to LabNet, teaching "Advanced Math" without a textbook and developing topics through extended, independent problem solving. Miranda continued his use of small-scale projects when she took over the teaching of that class. Bonnie, who was also working with a like-minded co-op, used several small projects in her teaching, including a series of small projects related to circles in a "mini fair" celebration of "Pi day."

Ryan and Annie were the most ambitious in experimenting with larger-scale projects. Ryan described a long-term assignment he designed for his earth science class:

> Subj: Story 5, part A 94-04-30 23:03:00 EDT
>
> From: RYAN FIELDS
>
> . . . Early on in my student teaching, I mentioned to my co-op that I wanted to get my freshman earth science class involved in "project learning" which I had read about through LabNet. I envisioned something which would address almost all of my framework goals by having students DO science. . . .
>
> If this was going to be an "authentic" involvement in science, then they would have to decide what they were going to study. They are only limited by their imaginations, what the study site has to offer, time and equipment, and their group's topic focus. This story is about what the five groups (plant, soil, animal, water, and energy) have done so far and our interactions outside. I can tell you at the beginning that I am thankful to have been able to do this "experiment" during my student teaching and I have learned a great deal from it already.

Ryan went on to detail what he assigned, supported by his co-op, and the students' progress. He brought the class to "Mill Brook" and had them divide into five groups: animal, water, plant, soil, and energy. During the first visit, each group made observations related to their area of focus and, from those observations, formulated their own questions to research and hypotheses to test. In his story, Ryan reflected on the frustrations and rewards of his efforts.

Annie used projects extensively in her math teaching, over the skepticism of her co-op. In one project, she had students work on a version of the "traveling salesman problem," asking them to plan a trip for someone that would meet certain constraints of time and distance. Annie got an idea for another project using an advertisement, which David brought into the Tufts seminar, comparing AT&T's rates to MCI's. Her story about this project, posted to the Student Teachers Board, included her reflections about her learning to follow a project approach:

> Subj: Valuable Lesson 94-04-10 20:07:07 EDT
>
> From: ANNIE LEWIS
>
> I thought I'd share with you what I believe to be a successful activity I implemented in my Honors classroom last week. I consider it successful not only because of the positive reaction and excellent work I received from my students, but also because it reinforced for me some very important "teaching" do's and don'ts. . . .
>
> I had planned to discuss the ad in class, asking what the students thought about the information presented. I hoped that through this discussion we would touch upon the real meaning of percentages, how math relates to the real world, and the importance of being an informed consumer. Prior to the discussion, I passed out the ad to the students as homework, and asked them to consider 3 questions that evening. As I recall they were, What do you think of this advertisement? If you could question AT&T/MCI on their respective programs, what might you ask them? and finally, Who do you think paid for this ad? I discussed this assignment with my co-op and informed her I wanted to spend the first half of class discussing their responses to the assignment. She didn't seemed all that impressed with the project, but consented to my using fifteen of the fifty minutes of class time to pursue the topic. Her coolness to the whole thing had very little affect on me, since I was certain I had the background to make something worthwhile come of it all.

Annie's story reflected on her surprise at the students' enthusiasm and on what she described as her mistake of letting the class evolve into her fielding students' questions. She went on to explain how she caught herself, changed tactics to focus on the students' knowledge, and nurtured the activity into a "full fledged project." The students analyzed their home telephone bills to understand the calculation of charges and the effects of discounts; they interviewed representatives of AT&T, MCI, and Sprint; and in some cases they convinced their parents to change long distance services. The results, as perceived by the students, their parents, Annie, and her co-op, were an enormous success, and Annie later reported that she has continued to use this project in her first years of teaching.

There were also indications of influence on the student teachers other than with respect to projects, such as in the following post by Robert:

> Subj: Story 5 - Part B 94-04-21 13:18:32 EDT
>
> From: Robert Corning
>
> . . . These kids frustrate me, but I am not yet ready to believe that laziness explains the lack of quality in their work.... I plan to borrow an idea that is currently being used on LabNet. I'm going to split the class into groups of three and have them write a science fiction story about time travel together. I haven't yet decided if I should have them work on the story together, or if I should assign one third of the students to each write the beginning of a story and then pass it on to another student next week. Any ideas?

In sum, there were indications throughout that the student teachers were influenced by the conversations on LabNet, whether or not they contributed to those conversations. Some of this influence was in specific ideas for lessons; we also believe that some was from the general tenor and expectations of the community, the tacit challenge to innovate, using projects or otherwise.

INFLUENCE ON THE LABNET COMMUNITY

Not only were the student teachers influenced by the LabNet community, but there are reasons to believe the impact was reciprocal. Over 20 LabNet teachers exchanged messages with student teachers from January through May, of which the previous section presented several examples. Communication between the student teachers and LabNet teachers also extended beyond the school year. During the summer, Robert started a folder that was an outstanding illustration of how a novice's question might stimulate discussion:

> Subj: Looking for suggestions. 94-07-02 18:17:30 EST
>
> From: Robert Corning
>
> Hello. My name is Robert Corning. I've been using LabNet for about six months now while a student teacher and am now in the process of preparing for my first (paying) position as a physics and chemistry teacher in _____, MD. I'd like to use this folder to solicit suggestions and advice about starting the school year right. I realize that includes a lot of things, but I'd be interested to read how, specifically, you start out the year. For instance -
>
> How do you communicate your overall expectations to the students?
>
> How do you establish classroom rules? (This is a tough one for me. I've always believed that simpler is better, but am struggling to find a brief list of rules that will address all of the specific behaviors that occur in the classroom.)
>
> Do you (how) establish communication with parents?
>
> Thanks in advance for your input.
>
> Robert

Robert's folder became one of the most active in LabNet, with 31 messages by 24 LabNet members over the course of two months. This is significantly greater than average number of 13 messages per folder with the average number of participating members to be 5.6 per folder. Teachers described their first day practices and posted samples of handouts; they discussed whether it was appropriate to present classroom rules on the first day. Several veteran teachers reported that the folder prompted them to reconsider how they started the year:

> Subj: Old Dog-New year 94-08-24 12:51:31 EST
>
> From: DF_____
>
> I have been enjoying this folder since the beginning and since school just started I wanted to share that the content here helped me change my way of beginning school. For many years we came in the room and had the rules and got started before we tried any activity. This year I decided that a good way to start thinking of measuring, collecting data and analyzing data was to do a first day activity where we would solve the problem of How tall is the Average Biology student. . . .
>
> Subj: Re:Old Dog-New year 94-08-24 22:35:17 EST
>
> From: AEJW____
>
> I have really been enjoying this file too! It made me redo some thinking about how I started my first day with the students--which was today! I have never handed how books the first day, but I sure have spent time repeating the class rules! . . .

Many of the posts to this folder were atypical in several important respects (DiMauro & Gal, 1994; Herrman, 1992), namely in their length, detail, and reflective quality. Robert's message thus prompted a rich, extended discussion; perhaps conversations with beginners can prompt experienced teachers to re-examine their practices.

CONTINUED INVOLVEMENT UPON ENTERING THE PROFESSION

In this respect, our experiment in linking student teachers with a professional community was not successful. Although most of the student teachers expressed the intention of remaining with LabNet after graduation, only Michael, Annie, Ryan, and Robert continued to participate, and only Michael and Ryan remained involved for more than a year. There are some obvious reasons for this: Three of the eleven student teachers did not become teachers; three others did not own their own computers - they had been borrowing equipment from Tufts - and several who were able to obtain Internet accounts at their schools, free of charge, decided that membership in LabNet was not worth the expense of subscribing to America Online. Finally, like many of LabNet's members, neither Michael nor Ryan chose to continue their memberships when it moved to its current web site. At present, although most of the student teachers from the second year of this experiment are on-line in some way, none are currently members of LabNet.

SUMMARY AND CONCLUSION

This article has reviewed our first attempts to introduce student teachers to LabNet, a progressive, electronic community of teachers interested in project-enhanced science and mathematics education. We have given excerpts from interactions made possible by this use of telecommunications, between experienced teachers and pre-service interns. The student teachers participated and interacted with the LabNet community, mostly reading from community discussions, occasionally contributing to those discussions, and, in a few cases, by exchanging private electronic mail.

In spring 1994 there were about 600 science and mathematics teachers in LabNet.[3] The student teachers thus had access, from their homes, to a broad range of experienced teachers, their ideas and resources, far beyond what was available in person at their university program and internship sites. In sum, LabNet provided the student teachers a *community* and the benefits that entails. It was not a community they would expect or need to change - the LabNet newsletter appeared monthly, by electronic mail, with news of members' accomplishments, including awards at state and national levels, grants and publications. Rather, it was a community they could look to for ideas, support, and encouragement, and one that offered by its existence a challenge of excellence and innovation.

We have noted several ways in which LabNet membership contributed to the student teachers' education. Labnet provided

1) specific ideas for instruction, including suggestions for projects in mathematics and earth science, recommendations for sources of materials, first day of school activities and suggestions for how to establish appropriate classroom expectations and behavior. In other discussions, LabNet provided the student teachers with ideas about assessment, strategies for working with parents and administrators, and even job leads.

2) a sympathetic, supportive audience for the student teachers' ideas. We presented examples in Michael's posts; other student teachers who took advantage of LabNet to express their ideas included Bonnie, who described her plans for PI

Day, and Doug, from the first Tufts cohort of student teachers, who offered numerous suggestions for projects and demonstrations, both as a student teacher and for several years as an active member. LabNet members received the student teachers warmly, welcoming their participation and encouraging their entrance into the community.

3) general impetus and support for the use of projects in instruction. LabNet was designed to support project-enhanced science learning, and this was reflected in its forum conversations. Seven of the eleven student teachers explicitly considered and five actually used LabNet-style projects during their internships. We speculate that much of this influence on the student teachers was tacit, that it was their general awareness of LabNet as a sizable, highly-regarded community of teachers using projects in their teaching, as much as the specific content of the LabNet message boards, that motivated them to consider progressive methods.

We mentioned but have not discussed another benefit to the use of LabNet, that of the contact it provided David, a university educator, with teachers in the schools. In this respect, LabNet supported the seminar at Tufts. In fact, it is possible that this was its most important role: At the end of the year the student teachers' credited the seminar as having had more of an effect on their development than LabNet. We believe, nevertheless, that the their sense of the LabNet community played a significant role in their experience in the seminar. In particular, their participation in LabNet allowed them to see David - and allowed him to serve - as a representative of a substantial community of teachers, rather than as an isolated education professor.

We believe the modest successes of this experiment point to strong possibilities for the use of telecommunications in preservice teacher education and inservice teacher community. In particular, it points to the potential for a broader community integrating university educators, teachers in the schools, and student teachers.

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