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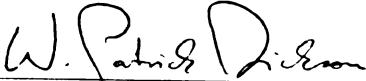
Frequency, Continuity of Participation,
and Content in an Online Virtual Community
for Education Professionals

presented by

Vickie L. Banks

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**FREQUENCY, CONTINUITY OF
PARTICIPATION, AND CONTENT
IN AN ONLINE VIRTUAL COMMUNITY
FOR EDUCATION PROFESSIONALS**

By

Vickie L. Banks

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ABSTRACT

FREQUENCY, CONTINUITY OF PARTICIPATION, AND CONTENT IN AN ONLINE VIRTUAL COMMUNITY FOR EDUCATION PROFESSIONALS

By

Vickie L. Banks

In this study, conducted by the main editor of a well-known public e-mail list for educators, insight is provided into how successful learners are using e-mail lists as a medium for professional development. Archives of messages available to the public via the Internet and the World Wide Web are analyzed to show usage patterns and incidence of various categories of postings. A descriptive analysis of types of content in messages published on the EDTECH list between February 1989 and January 1997 is combined with an aggregate quantitative analysis of numbers and changes in frequency patterns of messages posted at various points in this period of time. In the study discussion is included on numbers of postings, spread of postings over subscribers posting, differences between original postings and replies, and numbers of inquiries vs. informational postings, etc. The analysis concentrates on providing a rich and detailed analysis of EDTECH as a professional learning environment. The main goal of this study is to describe in detail the activity of a list and its educational benefits from analyzing its publicly available archives.

The study concludes that frequency of posting may be predictive of continuity and duration of participation. Somewhat stable frequency patterns can be observed irrespective of which subscribers are participating at any given time. Content, though reflecting the events of the time, tends to follow patterns as to its intent and overall purpose.

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Dedicated to the subscribers and participants of EDTECH,
who inspire me daily with their insights and great
willingness to help others expand their understanding of the
uses of technology in education.

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of expanding the availability of the EDTECH archives via H-NET's WWW site, and enabled me to conduct a much more sophisticated level of research.

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Chapter 1

INTRODUCTION AND REVIEW OF LITERATURE

Overview

This chapter begins with a discussion of the purpose and significance of a study on frequency, continuity and duration of participation and content in EDTECH, an online virtual community for education professionals. Next some of the dimensions for studying professional electronic mail communication networks are defined. A review of relevant literature on frequency, continuity and duration, and on content follows, concluding with a statement of the research questions and an explanation of the organization of the chapters in the rest of the study.

Purpose and Significance

The purpose of this study is to better understand the dynamics and educational value of EDTECH, a long-running online discussion group used by professionals in the field of educational technology, by engaging in a rich quantitative and graphical examination of the archives of its messages. The EDTECH list is multidimensional or multi-access. Though primarily a classic moderated Listserv e-mail list, it is also gatewayed to Usenet News and several private bulletin boards. To accomplish this research, archives of messages (known as “logs”) were analyzed in three main domains at different points in time between 1989 and 1997. Patterns and

incidence of participation behaviors and/or types content were shown. Of specific interest were those that might indicate the extent and effectiveness of the use of the electronic group in enhancing the participants' professional effectiveness by helping them solve problems, and by offering them new information, concepts or procedures to use in educational settings.

There is growing attention being paid to the centrality of Internet communications as a part of education. As Gates (1995) indicates, the popularity of the Internet is an extremely important development in the world of computing. He predicts its ongoing very rapid development as a resource for sharing information and teaching resources. Rheingold (1993) insists in his well-known work on virtual communities, that the real frontiers of the Internet and the place most deserving of attention, is the electronic communities that evolve with e-mail or bulletin boards. There is also a growing body of commentary on how use of different online mediums strongly impact identity (Turkle, 1995). During the period of this study, all over the world, electronic networking began to be emphasized as an important possibility (Association of African Universities, 1993). This was an era where the ability to interact skillfully and network, a form of practical intelligence, grew in respect over more traditional forms of ability (Goleman, 1995).

Definitions and Dimensions of Professional Electronic Mail Communication Networks

In this study there is a detailed look at the way people participated in the EDTECH e-mail list. Before embarking on the discussion of what research has been done and exactly how EDTECH worked, it is important to attempt a definition of what EDTECH was between 1989 and 1997. During that period EDTECH evolved in overall format and content. What it was can be reflected by its artifacts - archives of messages available in different formats. But to fully understand these artifacts, an understanding of the genre, context and enabling technologies of the period is essential. In this Chapter the study is placed in historical context so that the implications of the study can be better understood by those not versed in all of the relevant technologies, or who were not using them over all the period of their evolution, particularly during the years of the study.

This survey of background will be accomplished in two ways: by historical descriptions and by looking at various dimensions that characterize discussion groups. In order to effectively discuss some of the technologies central to computer conferencing, it will be important to define and describe certain of the major elements involved.

Static definitions, while essential, are insufficient to describe the place of professional electronic conferencing or its advantages and impacts in isolation. The

new genres exist in symbiosis with older ones, product and extension of them, as well as pointing to new possibilities. As Rich Gold (1997) comments:

Genres change as social patterns change. When the web was young only a hundred years ago, one got to a specific page by walking the tree: clicking from blue link to blue link. This meant that the designer of a page knew that a consumer went through intermediate pages. With the advent of search engines (such as Alta Vista) a consumer could go directly to a page. But an informal survey suggested that most sites one goes to are because a human told them about an address, or handed them a www on a small piece of paper, or they saw the url in a magazine article or ad. In other words, the web currently works because it exists in a sea of other genres and documents, most of which are not electronic.

As this study examines how, how long and how much people participated in the group, fundamentally it is necessary to understand what they might have been participating in, to derive any real understanding of the possible impact of that participation. In addition, we may ask, "What were the EDTECH participants doing?" as they sent thousands of messages over an 8 year period. How was this different and how was this the same as what people have always done? What is unique about it? How does any uniqueness and/or sameness relate to its educational impact?

"Technology refers to any machine or process that makes work easier or that helps people get something they need or want." (Hirsch, 1989, p. 246). An e-mail discussion group essentially involves people broadcasting information and engaging in discussion with groups at a distance on an asynchronous basis. Though this medium is relatively new, all of the elements have historical antecedents ranging back to antiquity. Cave paintings, stelae, and early newsletters or broadsheets could be

considered early bulletin boards. Drum messages, smoke signals, homing pigeons and even the pony express carried communications to individuals and groups at a distance. Researchers find problems of interpretation, technical language, encoding and other "modern" issues even in these early mediums (Hart, 1991; Crystal, 1997). In the late 19th and early 20th centuries, the development of radio, telegraph, telephone, and television set the stage for the computer revolution of the late 20th century. The fact that the World Wide Web grew from nothing to several million users within a few years leads people to believe that the new possibilities for communication are recent. But as Dertouzos (1997) points out, the first computer communities were formed over 30 years ago. Many of these innovations were also predicted even earlier in science fiction and other speculative thought (Parrinder, 1995; Ash, 1975). Though there were many examples of help-based networks over time, Amateur Radio provides a realistic early model for much of the electronic mail networking activity, mirroring it in style and intent (Radio Amateur's Handbook, 1946) and offering a code of ethics closely paralleled by Internet list managers and participants.

Cross and Raizman (1986) define electronic mail as including on-to-one or one-to-many communications that include data, text, audio or graphics, and are transmitted electronically. They indicate that electronic messaging itself reaches back to the mid-1880's with telegraphic and facsimile transmissions. According to Campbell-Kelly and Aspray (1996) electronic mail had never been an important

motivation in the development of the original Internet, but eventually became a driving force behind its development. According to Hafner and Lyon (1996) e-mail began in the 1960's on time-share systems and exploded outward rapidly as one of the most popular and essential applications of the growing Internet. In the period 1989-1997, e-mail was largely accomplished by a person typing text into a terminal or personal computer and sending it in text format to recipients. The speed of typing and transmission depended on modem speeds, which in 1989 were largely in the 1200-2400 baud rate for average subscribers. Transmission rates and faster LAN useage gradually increased as time passed, so that by 1997 most subscribers were accessing EDTECH messages at 28,000 baud or faster, a factor that may have contributed to increased volume. In general messages received were text based, since EDTECH didn't accept formatted mail during the time of the study. They were received individually by most subscribers, and selectively opened and read. As time passed, people made increasing use of filters and other aids to handling mail volume, allowing more efficiency in dealing with list messages.

EDTECH is primarily a Listserv list. Listserv began as a plain mailing list program created by Ruchs and Oberst. Then about 1986 it was revised by Eric Thomas and has since become a platform for scholarly collaborative work (Gilster, 1995). By about 1993 LaQuey (1993) says there were about 2600 mailing lists on the Internet (most not listservs). She defines Listserv as an automatic discussion list service, but speaks more of Usenet News as a basis of online community. By 1993

EDTECH was already having an impact in books on the Internet, and was listed as one of the major educational Internet mailing lists (Hardie and Neou, 1993).

Dimensions for studying communication networks. Discussion groups cannot be precisely defined, as they vary over many dimensions with respect to structure, genre, participants and content. Many researchers concentrate on the technological and functional possibilities of systems. For example Rapaport (1991) emphasized that a working system must be available, have good leadership and support, a purpose and be adequate to handle the discussion, but did not discuss the dynamics of understanding the human factors or the quality of the content that would be generated by putting them in place. Some of the dimensions that will be discussed in this study are listed below. These are only a few of the possible ways one could characterize e-mail discussion groups. Additional topics and areas of study for further research will be recommended in the concluding chapter.

Structure and Genre

- High volume vs. low volume – number and size of communications in words or in time it takes to view, read or participate
- Frequent vs. infrequent – frequency with which messages arrive.
- Interactive vs. broadcast – ability of participant to influence and create content

Participants

- Short-range vs. distant – physical spread of participants
- Frequency - the same people vs. different people participating – referring to the relative volume of postings by each individual
- Duration and stability - the same people continuing to participate short vs. long term – referring to whether the same people participate at different points in time
- Widespread with regard to participation vs. not – number of active and passive participants

Content

- Helping others vs. self promotional
- Lesser vs. greater diversity of topic
- Responsive to questions vs. not
- Requests and responses (promises and assertions) vs. declarations and assessments.

Review of Related Literature

In this section some studies in the area will be discussed, as well as related research in communication, computer mediated communication, and virtual communities. Since e-mail conferencing groups are a relatively new phenomena, research is somewhat limited. There are anecdotal reports (Shirky, 1995) but few in-depth and longitudinal studies of the general dimensions of electronic list and conference participation. There are several centers actively promoting additional research at the present time though. The Center for the Study of Online Community at UCLA encourages studies that focus on how computers and networks alter people's capacity to form and work with groups, organizations, and institutions. While not a research center per se, The Well with its over 260 Conferences on a wide variety of subjects is the object of many research papers on Virtual Communities and the use of Internet Conferencing in general.

Background on Determining and Comparing Continuity, Duration, Frequency and Content

Continuity, duration and frequency of participation within professional and scholarly electronic mail discussion groups is an expanding area of discussion and

study in general research on computer mediated and networked communication (Rojo, 1995; Rafaeli, et. al., 1994). The length of time one participates and frequency of posting seem likely to be related to a participant's experience in the group, so researchers generally comment on, or actively pursue data on these. This is not the sense in which duration is used in this study. There are several ways that researchers often consider duration and frequency. This study will concentrate on the duration of active participation, the length of time a person evidenced active, public participation in the group by making public postings. It attempts to reflect the sense of continuity of participants people might experience if they participate in the group continuously across a span of time. If, as is common with a large and active groups, they drop in and out of the group, participating or reading its archives at different points over time, it will discuss how likely it is the people would feel they are returning to the same, rather than a different group. We are looking at what a person might find familiar and continuing in the group as a virtual learning community, as well as evidence about how many participants remain with the group for varying periods.

How Desirable are Continuity, Duration and Frequency?

Is it better to remain in a group for a longer vs. a shorter period of time? Many researchers accept that it is better if participants remain active for a longer, rather than for a shorter period of time, and that it is preferable to have a greater, rather than a lesser, frequency of participation. (Rojo, 1995; Zenhausern, 1997)

There is considerable merit to this approach, as much of the activity generated by an e-mail discussion group never appears in the archives of the list itself.

It is common for participants to mainly be involved in groups as readers or lurkers, who benefit from messages but do not respond publicly. They may use the information, forward it to others or discuss it with them, or respond privately to an individual posting to the list. However, there remains a debate about whether duration is to be desired. Some current thinkers make the point that more is not necessarily better with regard to use of computer communications (Roszak, 1994; Stoll, 1995; Talbot, 1995; Gergen, 1991). They imply that close examination of the impact is in order, since it may shift people's identity (Negroponte, 1995) or reality (Slouka, 1995). Or like Hudson (1997) they, while not being especially negative, warn that there are many sides that should be accorded careful scrutiny. Others take a more optimistic time (Negroponte, 1995; Gates, 1995), while still forecasting shifts in identity, so that people can become, for example, more "digital". Some recommend careful restructuring of points of view to accommodate these changes (McLuhan & Powers, 1989). In spite of all this discussion, there are few criteria developed for how much communication in what sort of computer assisted discussion groups might be optimum.

It can be assumed that continued participation in a group indicates that the participants are deriving some benefits, or they wouldn't continue. Any active group will require the expenditure of time and effort to handle and respond to the

communications. On the other hand, just as it may not be necessary to continue in the same university class for several years, continued participation with the same group, when many groups on different topics are available, may not always be the most useful, learning oriented behavior. It could possibly point to a degree of stagnation or inertia about exploring new ideas and topics. In the same way, it can be debated whether high participation in terms of numerous, frequent, or lengthy posting of messages is a useful learning behavior, and if so, to what extent.

Some researchers feel that diversity in who posts during any given month is a positive situation, rather than one that might indicate a problem. These people feel that this shows that the group is one where a wide variety of people feel free to participate, and so this situation is a good one in that it displays a wide diversity of input.

Is more mail better than less mail, or more information better than less? Similar to the debate on whether it is better to remain in a group for a longer period of time, is the debate on how much is too much with regard to e-mail and also with regard to participation. With a large realm of activities possible for any individual, how much is optimum, as far as participation is concerned? Is the "best" list member the one who posts the most, or should another criteria be used for determining the more productive behaviors on e-mail lists?

Definitions and Research Related to Frequency, Continuity, Duration and Content

This section will offer basic definitions of the major research parameters and discuss some additional studies that have addressed these areas.

DEFINITION OF FREQUENCY

Frequent: Occurring or appearing quite often or at close intervals.

Interval: A space between two objects, points, or units. The amount of time between two specified instants, events or states.

The American Heritage Dictionary (1992)

Figure 1.1 - Definition of Frequency

Frequency of participation refers to a variety of active behaviors, including all posting or specific kinds of posting behaviors, and (where known) reading, thinking about, referring messages to others, responding privately, acting on contents of messages, and other behaviors associated with being actively involved with the group. Some of these are readily observable in the list archives. Others would need to be discovered via interview or survey.

According to Rojo (1995), conditions associated with a high rate of contribution and adoption included a balanced in and out flow of members, members who perceive themselves to be receiving a high number of benefits, a high percentage

of regular contributors and an active list owner. Rheingold (1993) says that on the Well, 16% of the people contribute 80% of the words.

Sproull and Kiesler (1991) indicate that participation in electronic groups may be more useful for those less actively involved, than for those more active members, but do not consider the impact of differences in frequency of posting for those who are active.

DEFINITION OF CONTINUITY

Continuity: An uninterrupted succession or flow; a coherent whole.
Uninterrupted in time, sequence, substance, or extent.

Continual: Recurring regularly or frequently. Not interrupted; steady
Synonyms: *continual, continuous, constant, ceaseless, incessant, perpetual, perennial, interminable.*

These adjectives are compared as they mean occurring over and over during a long period of time. *Continual* can connote absence of interruption but is chiefly restricted to what is intermittent or repeated at intervals. *Continuous* implies lack of interruption in time, substance, or extent. *Constant* stresses steadiness or persistence of occurrence and unvarying nature. *Ceaseless* and *incessant* pertain to uninterrupted activity. *Perpetual* emphasizes both steadiness and duration. *Perennial* describes existence that goes on year after year, often with the suggestion of self-renewal. *Interminable* refers to what is or seems to be endless and is often applied to something prolonged and wearisome.

The American Heritage Dictionary (1992)

Figure 1.2 – Definition of Continuity

This study looks at both the continuity of participation over the months immediately preceding and immediately following the target month. It also discusses duration, participation ranging from 6 months to several years from the target month. It considers questions such as, “Is the communication continual, continuous and perennial.”

Powers (1997) maintains that stability is key to building virtual communities, but concentrates mostly on the technical aspects of maintaining access, rather than the more human ways of promoting continuity and duration of participation.

DEFINITION OF DURATION

Duration:	Continuance or persistence in time. A period of existence or persistence.
Persistent:	Existing or remaining in the same state for an indefinitely long time; enduring.

The American Heritage Dictionary (1992)

Figure 1.3 – Definition of Duration

Duration, as discussed in some studies of computer mediated communication groups (Rojo, 1995), refers to the length of time a discussion group member has been listed as a subscriber to a group, without taking into consideration what level of participation the subscriber demonstrates. Those who never look at the postings they receive, those who post rarely, and those who are very active in the group are

generally treated the same in many studies of duration. Duration is often determined by comparing subscriber lists at two different points in time in order to determine which members of the initial list are still on the final list. This does not take into account whether the members actually are reading or even receiving messages, as their subscriptions may be set to “no mail” (a setting which continues the subscription in theory, without actually sending the participant any mail), never read, or filtered (automatically redirected by software) into trash (where the messages is deleted, or set up for deletion).

Duration can also be determined by surveying all or a sample of participants and asking them how long they have been participants in the list. This method would be more likely to show empirical errors, since participants may not remember accurately. It would, however, offer a subjective validity, as time actively participating might be better remembered. Rojo used this method (Rojo, 1996). Duration can also be determined based on observable activity on the list, rather than by static subscriber status.

Researchers differ on methods and standards for determining continuity and duration of participation. At present there are no established parameters for gauging continuity and duration across different types of electronic communication mediums. Initially there is a question about how to distinguish a long-term participant from a more beginning one. In her study of scholarly e-mail groups, Rojo (1996) considered a new user one who had been subscribed to a group for 0-6 months, an intermediate

user, one who had participated for 7-11 months, and an old member one who had belonged for more than a year. Membership stability was one of the major dimensions Rojos studied, quantifying participants' plans to leave e-mail groups, as well as actual membership length. Rojo offered no specific rationale for the distinctions she used for beginning, intermediate, and old users though, so it could be debated that different time frames might have shown different results in term of her findings with regard to them.

DEFINITION OF CONTENT

Content: The subject matter of a written work. The substantive or meaningful part. The meaning or significance of a literary or artistic work. The proportion of a specified substance.

The American Heritage Dictionary (1992)

Figure 1.4 - Definition of Content

What do they discuss and how do they discuss it? With several thousand pages of text generated by EDTECH, the question of content is an essential, yet large one. Numerous studies attempt to address this question in terms of effect, interactivity, subject, etc. (Rafaeli, et. al., 1994). In the well known Annual Edition of Computers in Education, Hirschbuhl (1994) compiled a large group of articles about computers in education. Some of the major units included:

- Role of technology (emphasized philosophy)
- Curriculum
- Software and Classroom Applications
- Teacher training
- Multimedia
- Virtual reality
- Future directions

Though there is some overlap, the actual demonstrated concerns may be different in an in-person conversation.

As McLuhan (1964) pointed out, content is something that ranges far wider than the apparent meaning of a single message (selection of text) taken in isolation. If no one reads it, is there any content? What about if it's in the database and only 3 years later does someone read it? What if 5 people read it, but it's so long or otherwise annoying that 10 others stop reading everything else on the list because it was there? What if its redundancy of topic makes people tired of the topic, so they stop reading other postings? What if the fact that the message, though it says nothing useful, or even something false, causes others to join in and send good information. What if its only impact is the presence of its subject line (and not the actual message content)?

Winograd and Flores (1987) offer a potentially powerful model for going underneath the surface topics and interactions to observe the quality of communication in terms of actions and declarations that may have an impact on the individual and the field as a whole.

Research Questions

This study explores several questions in each of the major areas related to the EDTECH list and how participants have used it.

Frequency: The research questions for the discussion of frequency are designed to give an overall understanding of the number of times participants post and how this looks to a subscriber to the list in terms of proportions of messages that come from more and less visible participants. This may provide insight into the amount of interaction professionals have with a relevant online community in their field. It may also offer some baseline parameters for how students can be taught to interact with e-mail lists effectively. Since it is possible that frequency of participation is not a stable phenomenon, the question is examined at three somewhat separated points in time.

Research Question 1: How frequently do EDTECH participants post?

Research Question 2: What proportion of the total list messages come from different frequency category posters?

Research Question 3: Is this frequency of posting consistent at different points in time?

Continuity and Duration: The research questions regarding continuity and duration are designed to investigate if participants who interact with the list continue to do so over time. By understanding the range of time participants are active in a list, it may be possible to assess the usefulness of the list to the field. Developers of new lists may be able to better understand how many of their participants they could

expect to hold over time, and the number of new subscribers required to assure continued activity in the group. This study is divided between continuity and duration. Continuity questions look at participation over the short-term, a month on either side of the base months of the study. Duration questions consider more long-term participation, looking several years before and after each target month where possible.

Research Question 4: Over a short range of time, how many of the participants who post at least once seem to continue posting regularly?

Research Question 5: Do people who post more frequently, also seem to post more regularly over a short range of time?

Research Question 6: Over a longer range of time, how many of the participants who post at least once seem to continue posting regularly?

Research Question 7: Do people who post more frequently also tend to post over a greater length of time (exhibit greater duration of participation)?

Content: Quantifying the content in the messages on EDTECH might enable researchers to see what topics were being discussed by professionals in the field of educational technology over time, and how these varied. This would allow curriculum designers to better create content relevant to students in the field. It might also offer insights into the trends and concerns of professionals, which could translate into conference topics, publications and avenues for further research. The content research questions in this study attempt to quantify what was actually discussed on the list in a way that allows some comparison between different target

months, even though specific topics on the list may differ. They also address some differences seen between higher and lower frequency posters with regard to the percentage of messages they write which initiate vs. respond to conversations.

Research Question 8: What categories of topics are discussed on an e-mail list on educational technology?

Research Question 9: Do these categories or the topics that comprise them vary over time?

Research Question 10: Does the percentage of messages that initiate a topic or broadcast information differ between different frequency category of posters?

Organization of the Study

The background for this research into participation in the EDTECH e-mail discussion group is discussed in the introductory chapter and the relevant research and writing in the area summarized. The methodology used to construct the study is outlined in greater detail in Chapter 2. Additional detail about the history of the list and the characteristics of the participants is explained in Chapter 3. The main analysis chapters of this research are Chapters 4-6 where the frequency, continuity and duration, and content of the list are described and compared in detail. Then the main findings are summarized and additional suggestions for research in this area are offered in Chapter 7.

Chapter 2

METHODOLOGY

In the social sciences, particularly in areas susceptible to human influence, there is a growing body of thought that says that looking for certainty about how and why is less effective than interacting with the phenomena within its own context (Casti, 1990). As Geertz (1997) says, hindsight accounts offer only pieced-together patterning after the fact. Much ethnographic research has been concerned with developing theories rather than testing hypotheses (Hammersley & Atkinson, 1983). As Burke (1995) emphasizes, the major technological advances come from a complex mixture of insight, accident, circumstance and place that cannot be interpreted or understood linearly. Thus while striving to give an accurate picture of EDTECH and how it worked, this study doesn't attempt to offer scientific exactitude, but rather strives to illustrate and point at trends that may accommodate further understanding. Its general approach is to try to make the data more available in this way.

Approach

A quantitative, descriptive approach was selected for this study, as it deals with empirical observation of types and numbers of messages posted over the time and with an aggregate analysis of types of content in those messages. As Fraenkal & Wallen (1993) indicate, for categorical data, descriptive statistics may be the simplest and most effective way of summarizing available data.

After the data was appropriately reformatted, observation was made of the following types of information:

Number of messages total. This involves using available logging programs on the World Wide Web to total the number of messages in selected archives. Totals are generated for different months and years over the span of the study.

Continuity and duration of participation. This considers how long a poster in a given month, at various frequencies of posting, tends to continue to be an active participant in the group.

Number of initial vs. follow-up messages. This requires codifying the messages as to whether they were an initial message (one meant to start a conversation thread or offer some sort of new information) or a follow-up

message (one replying to a previous question or comment from another subscriber).

Number of messages by content category. Initial categories are constructed based on general topics that seemed to draw a fair amount of commentary. Messages referring to specific technologies and educational techniques are identified, and trends over time quantified and discussed. The study identifies through analysis, categories and typologies that may be useful in further research.

Number of messages by poster, total and in various categories. Just as the content of messages is important, observation of the behavior of individual posters can also be expected to illuminate much about how useful participation is and what patterns of participation can be observed. All messages posted are signed with the full name and e-mail address of the poster, and logging programs in use sort on this information. This information is quantified in the report without identifying any individual posting.

Number of messages by gender total. Though gender information is not always available, in most cases it can be discerned from the signature of the message, since messages are posted including full name. As there is an ongoing discussion in the area of educational technology about how and why the different genders use technology in the ways that they do, patterns of use

among representatives of the two genders can indicate whether participants in a professional list in the area of educational technology seem to be representative of general research and demographic data about the Internet. Their patterns of usage may also offer additional insights into the characteristics and possible causes of any differences from other populations that have been researched.

Archived Materials

This study concentrates on using the archives of the EDTECH e-mail network, which have been available to the public since the EDTECH list began in 1989. These are extensive archives, containing thousands of individual messages. Though there were fewer messages in the first few years, in the 6 month period from March through August of 1996, 4756 individual messages were posted and archived to EDTECH, a monthly average of 793 messages. These came from 3,423 direct subscribers (as of September 1996) and an additional approximately 8,000-10,000 readers via Usenet News, other electronic bulletin boards and World Wide Web archives. All messages used have been available to anyone in the public in various electronic formats, such as: on the Internet in archives of the Listserv, via World Wide Web pages and search engines, on archival CD's of Usenet News, and in other data storage locations.

Most e-mail groups operate by individuals subscribing or adding their name to a distribution list maintained by a piece of software called a Listserv or Listserver (or at times, in the case of similar alternate software, Listproc, Majordomo, etc.). Individuals send or post their messages to the Listserv and it sends them on to everyone who has subscribed to the list. In general the Listserv also archives, or keeps a log of all messages distributed by week or month. Anyone who can subscribe to the list can also order a copy of any of the message logs from the Listserv software. If one orders an archive, using standard Listserv commands, one receives a file in the mail containing a copy of every message posted during the time frame of the archive. This log contains the name and e-mail address of the original poster, the subject and complete text of the posting, and the date and time it was originally distributed.

In addition, some e-mail lists, including the EDTECH list, automatically post all messages to Usenet News, a very large international bulletin board system used by millions of people. The Usenet News version of EDTECH is called bit.listserv.edtech and has been available to anyone since 1989. It carries all EDTECH messages. The length of time that these messages are readily available varies by site from a few days to a year or more, but several organizations have archived all Usenet News messages to CD's or other types of electronic archives. The DejasNews WWW archiving site makes them available

via the World Wide Web for 2-3 years, with plans to add older messages, currently archived on CD's or tape, available in the future.

Many e-mail lists now include their archived logs on the World Wide Web at their own sites as well. EDTECH has also adopted this practice during recent years, so that anyone can visit the EDTECH WWW site at <http://www.h-net.msu.edu/~edweb> and read the contents of any message (from an extant log) that was posted to EDTECH.

Generation of Descriptive Statistics

A very important component of this research is the creation of a rich, detailed, and understandable description of the overall way a professional electronic mail list functions. To achieve the goals of this study, preliminary counts are made of messages in the various categories listed above, over different periods of time. Appropriate tabular and graphic displays are created which illustrate the differences in these numbers during the various time periods for which they were encoded. More finely differentiated displays are generated as needed for any data categories that seem to show potential differences during a single time period or changes over time.

There are several constraints to randomness of taking samples of messages, including the need to see every message over spans of time, in order to

quantify messages within subjects or frequency of posting by an individual.

Some months of data were corrupted or lost and are not available to the researcher on WWW sites at present. Holidays, vacations, substitute editors and other factors may skew results if data from certain time periods is used.

These issues will be allowed for in the various data analyses, in order to increase statistical validity of results as much as possible.

Ethical Issues

The issue of whether publicly available e-mail messages are an available database that researchers can freely use has been debated extensively in academic circles. The participants in ProjectH debated this issue among a large number of researchers (Rafaeli, et. al., 1994). Some researchers felt that such messages, since anyone can find and read them very quickly and easily using a variety of search engines on the WWW or by sending relatively easy commands to the Listserv software, should be considered entirely public, and all information therein considered available for full use in research. Other scholars in the ProjectH group doing research in this area have maintained that list archives should be treated similar to newspapers or other published documents.

However, some felt that, since a naïve poster may not have understood that the content of his/her messages would be available to anyone for an indefinite

period of time or anticipate that these messages might be studied, some safeguards need to be taken in terms of citing individuals when conducting research on archival materials. (Sudweeks & Rafaeli, 1997)

In the case of EDTECH, all subscribers were told upon subscribing, and periodically via e-mail reminders, that EDTECH logs are available to anyone, both at the EDTECH Listserv site and via various other sites such as the AskERIC gopher archives. Those posting via Usenet News, given its completely public nature, would know that their messages were being disseminated in a public environment. With the creation of the WWW site, subscribers were further informed that archives were also available to anyone on the WWW.

To help protect any individual who may not have anticipated the public availability and longevity of messages posted at some time from 1989 to the present, this study only used aggregate data, not identifying any individual poster by name or full e-mail address, and summarizing messages needed to illustrate or identify categories of content. For the majority of the study, the archives of the EDTECH list at various points in time between February of 1989 and January of 1997 were used. To avoid unduly influencing the results, message content was not to be analyzed for messages posted after the beginning of the study.

Though these messages are readily available to anyone with Internet e-mail or WWW access, in most cases the data is not formatted for ease of use or analysis. For purposes of this study, it needed to be reformatted to conform with the requirements of current logging, database and analysis programs. Missing or inaccurate subject lines were corrected. The same person sometimes posted under different variations of his/her name or e-mail address. To assist in database analysis, these variations were made uniform.

Standards for Measurement of Frequency, Continuity and Duration

This study tracks frequency, continuity and duration of active participation in a variety of ways in order to establish additional parameters and useful measures to employ in determining statistics for ongoing and long-term lists. In what time spans do we consider it important that a person post, or send additional messages, in order to be considered an active member of the group? As the discussion and charts show, when a longer span of time is considered, the evidence of duration decreased from what is shown by counting repeated postings by the same individual over a shorter span. By comparing differences in continuity and duration shown by calculating this variable in various ways

and over various time spans, this study will offer insights into optimum time frames and other methods of approaching longevity/frequency of participation.

The focus of this study is on empirical data such as counts and cross-matching of categories of postings and posters. It does not demonstrate cause, but only describes variation in observable behaviors. Many of the comparisons made here point only at aggregate numbers of messages without distinguishing their type. Others attempt to focus more narrowly on specific types of messages that may be more indicative of learning and educational interactions. Research on factors that predict the frequency with which someone will use e-mail indicates that there are a number of predictors that should be taken into account if considering background related to frequency and type of use. In her research Choi (1996) found that when asked if access to e-mail was for them very easy, easy, neutral, difficult or very difficult, those who reported easier access also showed a tendency to post a greater number of messages. Prior learning about how to do e-mail did not predict amount of e-mail sent. Choi's study often focuses on a particular type of communication that she termed collaborative, rather than on general e-mail use. Support in terms of class assignments and available technical support did predict additional collaborative use, though access did not seem to impact this number. Choi defines collaborative use as:

Use of e-mail systems for communicating and interacting between and among students, faculty and others, to learn a particular idea or skill or to accomplish a particular learning task. (p. 40)

Choi states that other purposes of e-mail use include “use of e-mail systems for reading, finding or searching for information”. (p. 40)

Use of Visual Displays

A variety of graphic/visual displays are utilized to make data as easily accessible as possible to those studying electronic mail discussion groups and to illustrate summaries of data in ways that may make implications more clear. As Tufte (1983, 1990, 1997) claims in his pivotal studies of graphical displays, graphics can go beyond representation to become tools to aid thinking and bring about fuller understanding of data. In general, results are displayed in both tabular and visual (graphical) form in order to facilitate understanding and comparison of data in as many ways as possible.

The analysis of electronic conferencing groups in field rather than laboratory conditions presents some serious problems for a researcher who wishes for any external validity to a study because conditions and influencing factors are changing so rapidly in the late 1990's. Most observations will probably not of themselves remain useful for any length of time, as conditions

will change and influencing factors will intervene to undermine some parts of the observations quite quickly after it is made.

Since this study attempts to provide a picture of a time, people and a method of interaction, many of the results will be displayed visually. Computer mediated communication and education methodologies may recur across technologies, in an age of multimedia, avatars, three dimensions, etc. If appropriate patterns can be developed, it is possible that they can be superimposed on non-identical but related communications methods and technologies to promote increased understanding and point at possible avenues for influencing the directions and outcomes of the interaction.

Description of Base Month Frequency, Continuity and Duration Parameters

Though this study looks at continuity and duration over a number of time frames, it focuses primarily on two designated months, and then develops other comparative time frames or focal points after analyzing this central data. The advantages of a time-based sampling period are that similar periods across a period of years can be easily surveyed. Seasonal variations in participation across several years can be discounted when a similar time period in terms of the season and its relation to the academic/school year are controlled. Archiving

components of the Listserv software log messages by the month, in whole month segments, or in four one-week and one partial-week segments. It could be argued that a message based approach would be superior, where randomly selected messages or blocks of a predetermined number of messages would be studied, regardless of the length of time it took for these messages to be posted. Though these might also yield interesting information, this study concentrates on what can be observed by looking at samples of one of the more common time-based groupings of archival messages. This study also attempts to provide further insights about the differences in results that might be achieved by varying the methods of calculating the base period in such longevity studies.

General Structure

Following this survey of methodology, the background and history of EDTECH are discussed to provide context. Then frequency of participation, followed by continuity and duration are discussed in detail. Finally the content covered by the participants studied in the earlier chapters is categorized and compared. The Appendices contain samples of coding instructions used for some analyses and further information about the structure and editing of the list taken from its WWW site.

Chapter 3

HISTORY, DESCRIPTION AND CHARACTERISTICS OF EDTECH PARTICIPANTS

Purpose of EDTECH: To promote discussions among faculty, students, and "interested others" in the field of educational technology about hardware, software, curriculums, & technology in education, and to study the development of EDTECH itself as a vehicle for extending traditional learning environments through telecommunications. (Banks & Rosenberg, 1989)

Figure 3.1 – Purpose of EDTECH

History and Timeline

On February 10, 1989 a group of graduate students and faculty at Michigan State University (MSU) started the Educational Technology Internet mailing list EDTECH. Participants of the CEP931 advanced graduate seminar in educational technology had been studying electronic mail and conferencing, and decided it would be worthwhile to expand the discussion to include professionals and researchers on educational technology from around the world. The group used the Internet and available resources to research the procedure for starting a list, formulated a purpose and created the documents required to set it up. With the help and encouragement of Professor Joe Byers, they formed EDTECH, thinking that perhaps someday two or three hundred people might become involved in a useful exchange on research into educational technology.

Initially the new EDTECH list was announced on other mailing lists and the New-List list, and promoted at several education conferences. A hard copy announcement was sent to all university departments that listed an Educational Technology program in AECT's 1988 Educational Technology Yearbook. The list was initially hosted by Ohio State University, which ran a major Listserv and was willing to host academic lists at no charge (Michigan State University, where the group involved with running and moderating the list was located, charged for disk space and related list costs.) Since Listserv then ran on BITNET, the initial address for EDTECH was EDTECH@OHSTVMA or EDTECH@OHSTVMA.BITNET.

The First Months of EDTECH

Since a graduate class was studying EDTECH, more careful documentation was kept of events and milestones on the list during the first few months of its existence. Updates were regularly sent to the list and archived. This allowed a fairly extensive chronicle of early events to be compiled. Many of these early events are summarized here to provide an additional point of contrast with the main months of the study and to offer an account of the first months of a list for other researchers.

During its first week (February 10-17, 1989) subscriptions to EDTECH were moderate (10 or 11) mostly from Michigan State University (MSU) students, alumni and contacts. By the end of February there were approximately 17 people subscribed, 12 from MSU. During February there were 6 messages (.3 per day) sent

to the EDTECH list. 100% of the traffic originated from MSU. The content of the messages was personal introductions and administrative access questions.

In March 1989, subscriptions and messages to the EDTECH list started to pick up significantly, nearing 100 subscribers by the end of the month. By 1997 standards, when a thousand or more subscribers often sign on to a new e-mail list during the first week, subscriptions were not impressive, but the rate was rapid by 1989 standards. Fifty-six messages (1.8 per day) were sent to EDTECH during its first full calendar month. Forty-three percent of list traffic originated from people at Michigan State University. Topics in March 1989 ranged from conference announcements to requests for information, references, and resources, but personal introductions continued to account for a substantial amount of the traffic flow. About 13% were not-relevant mail (commands, personal messages, etc.). Banks (1989d) suggested to the list that the end of this month was a turning point, as groups of over 100 might be more able than smaller ones to offer a comprehensive resource base for trouble-shooting more obscure problems. An analysis of topics was published by Banks (1989c) in early April, 1989 and is summarized in Figure 3.2.

March 1989 Topics on EDTECH	
Topic	Number of Postings
Personal Introductions	10
Competition in Education	3
Video games	3
Reading group	3
ADCIS	3
ICTE	3
Telecommunications	2
CAI	2
Interesting references	2
Software, interactive video, classes on Bitnet	1
DISTED Journal	1
EDTECH Questionnaire	1
Misc.	13
List maintenance	9

Figure 3.2 – March 1989 Topics on EDTECH

During April 1989 there were 82 messages (2.7/day) with 29% of the traffic from MSU. EDTECH had 130 subscribers at the end of April. In April 1989 there was a substantial increase in off-topic or inappropriate messages. This was a concern for the graduate group, who preferred not to host a group with significant "noise" content. After a survey and some debate (summarized in Banks, 1989b) with those who preferred completely unrestricted and uncensored posting, the group decided to begin moderating EDTECH. After April 23, 1989 all EDTECH messages passed by a list moderator or editor before being posted to the EDTECH subscribers. This means that instead of messages being distributed immediately to everyone on

EDTECH, when posted they are first forwarded to the list moderator, who intercepts and redirects private mail and command messages.

In late April, shortly after the change to moderating the list, a shift in the content and style of the list occurred. Until then most EDTECH messages dealt with personal introductions, a specific question and answer, a conference announcement, or mistakes (mail not meant for list distribution). There were no extended conversations on particular topics. On April 25, 1989 a question posted about screen capture for instructional purposes and related copyright questions started the list on its first extended interaction. During the last few days of April and the first several days of May there were 16 messages from 7 different members revolving around the copyright issue. Some were questions and answers, some contained references, and on others were speculation on possible scenarios. Figure 3.3 summarizes the April 1989 postings according to information sent to the list in May of that year. (Banks, 1989c)

April 1989 Topics on EDTECH	
Topics	Number of Postings
Copyright law	9
Instructional design	3
Personal introductions	4
Voice activated systems	1
Conferences	3
Interactive video	2
Textbooks	1
Benefits (or not) of educational technology	6
Teaching techniques	3
Distance education	5
Intelligent tutoring systems	3
Software	3
Journals	5
Alaska	1
Articles index	1
Costs of maintenance	2
EDTECH maintenance	13
Misdirected mail sent to list	17

Figure 3.3 – April 1989 EDTECH Topics

In May 1989 discussion continued to expand. It evolved to encompass broader and more theoretical themes like preparing teachers to use technology, and OLD technology (books and chalkboards) vs. NEW technology (hypertext and computers). These are themes that were to be repeated on EDTECH throughout its existence. People continued introducing themselves and their work, and sharing references and articles with each other, but EDTECH also became a forum for extended conversations among groups of people on different topics. It offered an

informal conversational environment that fostered participation, networking, and relationships. At the end of May 1989 EDTECH had grown to 183 members from 90 institutions and 15 different countries. During May there were 97 messages sent to the EDTECH list and 13 additional messages handled or redirected by the Moderator. This totaled over three per day with only 18% originating from MSU. Contributions to EDTECH in May 1989 came from 45 different subscribers, 25% of the total number of people subscribed to the list. The May 1989 messages were in the categories detailed in Figure 3.4.

May 1989 Topics on EDTECH	Number of Messages in Topic Thread
Introducing technology to teachers	28
Hypertext/hypermedia	16
Introducing technology into classrooms	13
Special education and technology	8
Copyright issues	6
Structure of school systems in various countries	5
Using EDTECH and BITNET services	5
State of American education	4
Measuring discovery learning	3
Distance learning	2
Educational technology in medicine list	1
Trends in school computer purchases	1
Grant announcement	1
General references	1
Computer based training	1
Graduate school programs	1
Comserve	1

Figure 3.4 – May 1989 Topics Discussed on EDTECH

The First Five Years

After the end of the 1989 academic year, less careful records were kept on EDTECH, though a yearly summary was usually sent in January or February of each year to subscribers. The yearly increases in subscriptions are summarized in Figure 3.5. Between June 1989 and February 1994 subscriptions expanded from about 200 to 1658 subscriptions from 30 different countries by February 10, 1994, EDTECH's fifth anniversary.

Summary of Number of EDTECH Subscribers		
Date	Subscribers	Countries
February 10, 1989	0	0
Jan. 1, 1990	353	15
Jan. 4, 1991	565	22
Feb. 7, 1992	905	22
Feb. 10, 1993	1290	28
Feb. 10, 1994	1628	30
Feb. 10, 1995	2315	37
Feb. 10, 1996	3229	44
Feb. 10, 1997	3472	49

Figure 3.5 – Number of EDTECH Subscribers

In spring of 1993 after many years of running on the Ohio State University OHSTVMA listserver, EDTECH moved to MSU when OSHTVMA stopped offering the listserver service. An agreement was made with the College of Education at MSU to handle costs of maintaining the list archives for EDTECH at MSU for the most recent months. References to EDTECH@OHSTVMA could still be found for several years after the list was moved, and some cites to EDTECH messages still refer to the Ohio State location; however as of early summer of 1993, EDTECH officially became EDTECH@MSU or EDTECH@MSU.BITNET.

In 1993, EDTECH's archives became more readily available when the AskERIC service began carrying EDTECH postings and archives and making them available over Gopher. This was a significant step forward in terms of access, since educators could expect to be able to refer back to and use EDTECH materials over a longer term.

Years Six through Eight

Between 1994 and 1997 there was another significant leap in EDTECH subscriptions and message traffic. Subscriptions went from 1628 in early 1994 to 3472 subscribers from over 50 countries by early 1997. There were over 650 new subscribers during 1994 alone, with subscribers on EDTECH coming from over 37 countries.

In 1994 Michigan State University changed from Bitnet to Internet-only, so in early summer 1994 EDTECH's address became EDTECH@MSU.EDU.

Activity to increase access also expanded with the opening of the EDTECH WWW archive site on the H-NET Humanities Online WWW server on February 10, 1996 at: <http://h-net.msu.edu/~edweb>

The archives began with a few months in 1995 and 1996 and eventually expanded to include all EDTECH archives still extant. At first the program Hypermail was used to convert the logs into HTML, and later a WWW database program owned by H-NET. The messages could be sorted by date, thread, subject and author, and searched by keyword. (See Appendix B for copies of selected pages from the site.) According to H-NET statistics, by May of 1997 the site was receiving over 2000 visits per week. During this period the WWW based Dejanews service also began archiving all EDTECH messages from the bit.listserv.edtech news feed, and provided an additional way for others to access the messages.

Summary of Number of Postings

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
1989		6	52	81	---	---	---	---	---	77	128	37	75.0
1990	61	57	---	---	---	---	112	71	68	68	77	63	72.1
1991	104	---	120	138	129	55	105	55	154	211	186	98	123.2
1992	118	164	175	208	218	184	184	227	214	306	275	293	213.8
1993	209	315	285	362	303	---	---	---	---	428	357	478	342.1
1994	515	580	---	---	569	313	---	---	544	811	732	419	560.4
1995	---	762	1072	653	---	536	517	516	672	706	696	616	674.6
1996	765	972	1153	598	975	627	591	847	767	841	895	530	796.8
1997	1168	908	1372	1119	1017								1116.8

Figure 3.6 - EDTECH Postings by Month

Figure 3.6 summarizes posting information about EDTECH that still exists. Over time a number of monthly archives were lost or corrupted due to technical problems. Averages are calculated on available totals. Since February 1989 was only a partial month, it was omitted. The archiving program at the H-NET WWW site is not accurate as it tries to count of the number of messages in the month, often incrementing the total extra in response to forwarded message or formatting in the body of a message that is similar to the top of a new message. These general totals are meant for reference and not precise statistical analysis, which should be done on verified counts of any months to be studied. Key monthly logs for this study were counted individually to increase accuracy.

People Involved in Moderating and Managing EDTECH

The main and usually only editor of EDTECH between 1989 and 1997 was Vickie Banks. This led to a consistency in formatting and style of editing messages sent and rejected. Mark Rosenberg and other members of CEP 931 helped set up the list during the first few months and establish its operating parameters and general direction. They mostly ceased work on the list after the course was over. During vacations there were often substitute editors. Marilyn Everingham handled the list for a few weeks in the summer of 1990 and conducted independent research on it. Mary Garrett moderated for a period of time in the summer of 1991. Wayne Cooley moderated during winter break 1991. Gary LaPointe, Mary Garrett, Mauri Collins, and Zane Berge were guest editors for periods of time in 1992. Noel Estebrook and Mark Coleman helped moderate during parts of 1993.

Sponsors and Technical Support

The Michigan State University College of Education and Department of Counseling, Educational Psychology, and Special Education at Michigan State University sponsored EDTECH from its inception by providing e-mail accounts, listserv storage space and necessary approvals to run an e-mail list of this size.

In 1995 EDTECH became affiliated with H-NET Humanities Online (<http://www.h-net.msu.edu>) which has been offering much needed assistance to EDTECH in handling its volume and developing its WWW site.

During 1898-1993 Ohio State University handled the listserver for the EDTECH. On almost a daily basis Duane Weaver, the postmaster helped troubleshoot EDTECH problems. After the move to MSU, the Michigan State University Computer Laboratory provided a great amount of technical support, mainly through Listserv postmaster Dennis Boone and later Margaret King. Dennis Boone was also instrumental in maintaining the gopher archiving function of EDTECH while it existed at Michigan State University. Since EDTECH affiliated with H-NET Humanities Online, it had an errors editor during peak periods to help handle several thousand bounced messages a week.

Where does EDTECH appear?

Exerpts from EDTECH frequently appear in other online publications. Also Small groups of faculty at universities form list networks, with each member subscribing to a couple of lists and forwarding the best stuff on to the others in the mini-net. EDTECH is also carried on Dejanews, AskEric and Usenet News as bit.listserv.edtech.

Topics Generally Not Discussed on EDTECH

EDTECH welcomed thoughtful discussion, questions and cross-postings about the uses of various technologies and instructional designs in education. Messages at all levels of expertise quite were accepted.

At first EDTECH was unmoderated, and then later only loosely so. By 1992 the yearly and other administrative mail began to contain more stringent guidelines for what would and would not be forwarded to the list.

The 1992 anniversary letter indicated that among unacceptable postings were:

- Things not related to Educational technology. There are many very important issues, but then there are many other lists that discuss them too.
- Duplicates--The same information answering a question a couple of times were perhaps sent on. But if several people write in giving the same response, after awhile these were not forwarded.
- Very long postings--prefer not over 200, definitely not over 500 lines.
- Commercial sounding messages.

BITNET rules were cited in early restrictions. "BITNET doesn't allow advertising over the network. Making a product recommendation is helpful. If it begins to sound like a commercial ad however for something you're selling however, we can't send it on."

EDTECH doesn't accept--personal messages for individuals, spams, flames, commercial advertisements, requests for reposting of recent messages you deleted, postings that have nothing to do with educational technology, messages over 500 lines long (usually-please summarize), messages in languages other than English with no translation provided, encoded files and/or programs, and other messages that wouldn't contribute to the quality of the general discussion. (Editor, 1995)

These basic policies were further elaborated on the EDTECH WWW site and in the Editor's Style Guide (see Appendix B).

Classes on EDTECH

Since early in its history, EDTECH has been used by university classes as a part of their curriculum. As early as 1992, the moderator noted that over 100 subscribers (EDTECH Editor, Feb. 7, 1992) had come in a class from the University of Missouri. EDTECH endorsed and encouraged class participation, but asked professors to introduce themselves and instruct their students on how and what to post and also how to sign off at the end of their class. This was frequently not done, so some student postings couldn't be accepted since they were inappropriate for EDTECH. Several editor communications to the list discuss problems with class subscriptions.

Geographical Distribution of Subscribers

Detailed information of geographical distribution of subscribers was not preserved over most of the span of EDTECH's existence. It is available for each of the last two years of the study though via reports from Listserv that were kept, and these are summarized in Figures 3.7, 3.8 and 3.9 below. Figure 3.7 gives an overview by area, and Figures 3.8 and 3.9 break this down into statistics for individual countries during each year.

Subscribers by Area EDTECH Feb. 1, 1997			
United States	2512	Europe (including Scandinavia, Iceland and Eastern Europe)	82
Canada	322	Africa, Middle East and Turkey	29
Australia, New Zealand & Pacific	99	South America	23
Asia (includes India, Japan, Korea, Thailand)	35	Mexico & Central America	8
		Unknown	346

Figure 3.7 – Subscribers by Area, February 1, 1997

GEOGRAPHICAL DISTRIBUTION OF EDTECH SUBSCRIBERS Feb. 10, 1996			
Country	Subscribers	Country	Subscribers
Argentina	1	Italy	6
Australia	48	Japan	4
Austria	1	Korea	2
Belgium	3	Malaysia	2
Belize	1	Mexico	13
Brazil	16	Netherlands	6
Canada	358	New Zealand	19
Colombia	4	Norway	3
Czech Republic	2	Poland	2
Ecuador	2	Portugal	2
Fiji	1	Saudi-Arabia	3
Finland	11	Singapore	5
France	3	South Africa	17
Germany	4	Soviet Union	1
Great Britain	24	Spain	6
Greece	3	Switzerland	1
Hongkong	7	Taiwan	3
Hungary	1	Thailand	5
Iceland	3	Turkey	2
India	3	United Arab Emirates	1
Indonesia	2	USA	2431
Israel	4	Venezuela	1
		Unknown	179
Total Subscribers	3229	Total Countries	44

Figure 3.8 - Geographical Distribution of EDTECH Subscribers, Feb. 1996

In 1997 72% of subscribers were from USA and 9% from Canada.

GEOGRAPHICAL DISTRIBUTION OF EDATECH SUBSCRIBERS Feb. 1, 1997			
Country	Subscribers	Country	Subscribers
Argentina	1	Italy	7
Australia	73	Japan	8
Austria	2	Korea	1
Belgium	5	Lithuania	1
Belize	1	Malaysia	4
Brazil	18	Mexico	7
Canada	322	Morocco	1
Colombia	1	Netherlands	7
Cyprus	1	New Zealand	20
Czech Republic	3	Norway	5
Denmark	1	Poland	2
Ecuador	2	Portugal	3
Egypt	1	Saudi-Arabia	4
Fiji	1	Singapore	4
Finland	6	South Africa	14
France	2	Soviet Union	1
Germany	4	Spain	4
Great Britain	18	Switzerland	1
Greece	6	Taiwan	4
Hongkong	8	Thailand	5
Hungary	1	Turkey	2
Iceland	1	United Arab Emirates	2
India	2	USA	2512
Indonesia	5	Venezuela	1
Israel	6	Unknown	346
Total Subscribers	3472	Total Countries	49

Figure 3.9 - Geographical Distribution, February 1, 1997

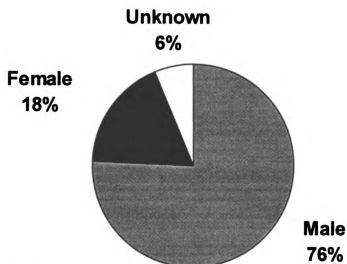
Gender of EDTECH Participants

The study of gender in an online community like EDTECH could generate many additional research projects, as it is a multifaceted field. For purposes of this study, a simple comparison of the apparent gender of the participants posting during the two main base months was calculated, in order to get a general gender distribution and an indicator of any apparent trends toward change. As many names are not gender-specific, and surveys were not used in this study, the category unknown was included in Figure 3.10, to account for the people whose gender was not obvious from their name. Of course, the information obtained could be less than perfectly accurate, since some people may use a name that appears to be that of someone of the opposite gender. It is hoped, however, that this information will assist those who are interested in doing additional work in the area of gender and online activities.

EDTECH Gender Comparison November 1992 vs. November 1995				
	Male	Female	Unknown	Total
1992	105	25	9	139
%	76%	18%	6%	
1995	272	112	9	393
%	69.2%	28.5%	2.3%	

Figure 3.10 – Gender Comparison 1992 vs. 1995

**Male vs. Female Posters--EDTECH
All Postings -- Nov. 1992**



**Male vs. Female Posters--EDTECH
All Postings -- Nov. 1995**

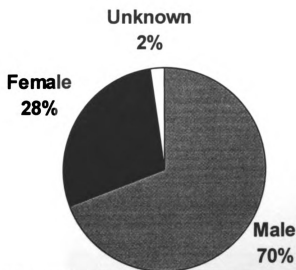


Figure 3.11 - Gender Comparison Charts

Summary

EDTECH has exhibited steady growth in terms of subscribers and numbers of postings since its inception in 1989. Though concentrated in the United States and Canada, it has a widely international constituency. As was typical of the Internet during the period of this study, there appear to be many more male than female participants, but this disparity shows signs of gradually lessening in the period between 1992 and 1995. Though mainly managed by a single moderator during most of its existence, EDTECH was nevertheless a cooperative venture of a number of people, including technical staff, assistant moderators, sponsors and the many people who posted the messages.

The preceding description provides a background for interpreting the following portions of this study, which consider in depth the posting and participation characteristics of the subscribers and the content of the messages they posted during different periods in EDTECH's existence.

Chapter 4

FREQUENCY OF PARTICIPATION

Overview

In order to investigate the question of whether the frequency with which participants post at different points in time is consistent, the frequency of posting during three distinct months of EDTECH is described in this chapter. These months are then compared to establish any recognizable patterns with regard to frequency of posting. In Figure 4.1 the general structure of the chapter is diagrammed.

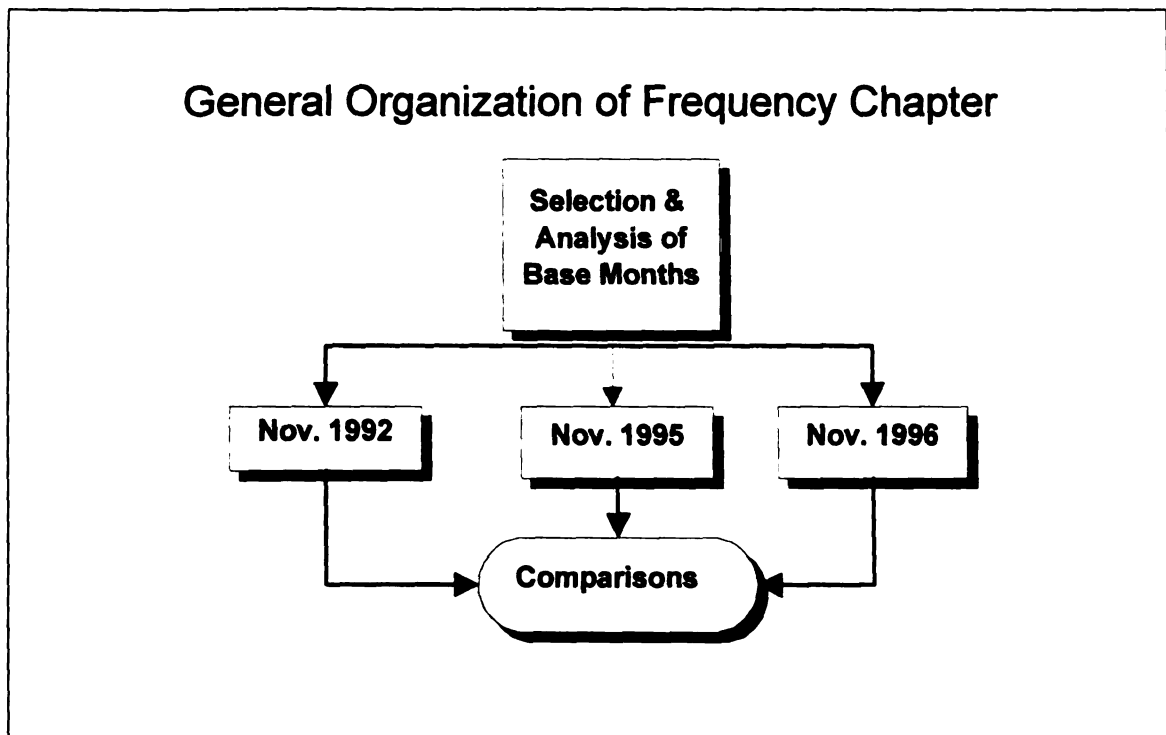


Figure 4.1 - Overview of Frequency Chapter

In this chapter the selection of base months and frequency categories is discussed first. It then goes on to show frequency detail about each base month and concludes by comparing the data for each month to see if any consistent pattern appears to emerge. Finally it provides suggestions for further study.

Frequency on EDTECH is defined by the number of postings made by a given participant or designated group of participants within a specified time frame. (See Chapter 1 for a more detailed discussion of the factors involved in determining frequency. Frequency categories must first be established to determine how to organize observations of continuity and duration.) Frequency of participation establishes the condition into which continuity and duration of participation can be studied, since continuity and duration may vary across different frequency categories of participants. In other words, people who post more frequently may also tend to post more regularly or over greater periods of time. They may also provide different content in their messages from less frequent posters. In order to investigate these hypotheses, frequency must first be carefully examined for selected time periods.

Understanding frequency is important because it is advantageous to know how often and in what quantity any given person should participate to achieve maximum learning goals in a group. Active posting behaviors are not strictly necessary to benefit from belonging to a discussion group. It is often noted that online groups have "lurkers," who may never make a public comment, but who nevertheless gain new information by reading the messages of others. Though not essential to benefiting from a group, active participation is an activity that enhances

learning, and one that can be observed. This study will concentrate on the active participants who create and respond to message threads. Though it does not imply that the only benefits accrue to these active participants, since their participation is the only visible part of the group dynamic, it does assume that they obtain an essential core of the possible results and set the tone and tempo of what others gain.

Selection and Analysis of Base Months

November 1992, November 1995 and November 1996 were chosen as base months to analyze for frequency for a variety of reasons. In general this study focuses on November 1992, November 1995 and months in immediately before and after them. Chapter 4 continues to emphasize these months, while widening the comparison by adding November 1996 to offer further information on whether trends continue to be maintained after November 1995. Since the characteristics of the Internet itself and the way people use it are quickly transforming in the 1990's due to the rapid increase in the number of people using the Internet and the alterations in available technologies, it seemed best to include a more recent month in the initial frequency analysis, contrasting it with earlier ones in the study to avoid conclusions possibly based only on a difference between 1992 and 1995, and not a difference that would be seen in any other comparison. Figure 4.2 shows the comparative number of postings in each of the base months.

Number of EDTECH Postings in Nov. 1992, 1995 & 1996

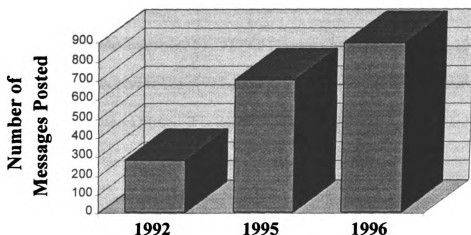


Figure 4.2 - Number of Postings in 3 Base Months

There is substantial variability in the month-by-month numbers of messages posted to EDTECH over a year span, due to the influence of academic year, season, editor vacations and other factors. Novembers of the respective years were used, rather than randomly selecting base months, because it was thought that the same month in different years would provide the best comparison. The end of December and early January are often vacation weeks for EDTECH and so would not be sufficiently typical to use as base months. As the charts in Chapter 3 show, June

through September tend to be transitional months, with many universities on vacation, and participation in the list more variable than during the main winter/spring and fall months. November 1996 was the latest possible month to use before the January 1997 end date of the study. So, it was decided to use the respective Novembers to make this initial comparison.

As Figure 4.3 shows, as well as a difference in volume over time, there was a concurrent shift in the number of EDTECH posters between 1992 and 1995. November 1992 was before the very evident increase in subscribers about 1994. Though only three years earlier, it is derived from a different era on the Internet and on EDTECH than the later years show.

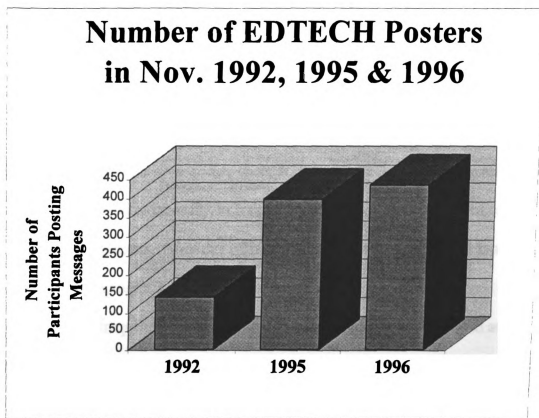


Figure 4.3 - Number of EDTECH Posters

Though the WWW software was released to the public in 1992, it did not penetrate into common usage in K-12 and university education until 1993 or later, after graphical browsers were introduced. The Internet was not yet open to commercial users in 1992 when there were less than 2 million host computers connected. It was a dramatically different environment than in 1995, when there were 6 million host computers connected, or the end of 1996, when this number had grown to about 15 million. The explosion in WWW sites was even more dramatic, with essentially none in 1992 (a few experimental sites), expanding to nearly 100,000 by November of 1995, and about 525,000 in November of 1996. (Zakon, 1997). After 1992, the influence over time of the WWW began to gradually be felt on the Internet and may have begun to influence the content and patterns of activity on EDTECH.

Frequency Categories

From each base month, the number of different individual participants posting was determined. (See coding sheet A in Appendix A.) In this Chapter, base months are discussed individually, in order to allow greater detail, and focus on the individual characteristics. After this initial analysis, they are also discussed as a comparative grouping of 3 months.

To study frequency, during each base month all messages included in any of the 5 weekly November EDTECH archive logs were used. They consisted of follow-up's to message threads begun in previous months and new topics with their follow-

up messages, as long as the responses were also posted in November of the respective years. Initially the number of times each participant posted was calculated and categories were created according to quantity of postings. Though there were concentrations of postings at lower numbers, many of the higher numbers of postings had only a single participant in the category and were handled in aggregate groups for purposes of analysis. Someone who posts 15 times may not vary in a significant, practical manner from someone who posts 16 times, especially if there is only one of each in a given month. It is unclear whether people posting two times are materially different from those posting 3 times, especially given uncertainties of the Internet and moderated e-mail lists in general. Mail may get lost or never be posted, so that some who are recorded as only posting 2 times may actually have sent in three or more possible postings. Other factors may intervene to blur distinctions between similar categories of multiple posters, so only categories which included a substantial number of posters were individually discussed.

November 1992 Frequency

This section will look at the early November 1992 base month in some detail, in order to provide a comprehensive basis for comparison. In November 1992 there were 275 messages posted by 138 participants to the EDTECH conference. As with the other base months, the November 1992 messages were sorted by participant name and counts were made (see Appendix A, Coding Sheet B) of the gross number of postings made by each participant. These totals are summarized in Figure 4.4.

Number of Postings Made by List Members

EDTECH November 1992

# of Messages Posted	1	2	3	4	5	6	7	8	42	Total
List Members	93	18	18	1	2	1	2	2	1	138
% of List Members Posting	67.4	13	13	0.7	1.4	0.7	1.4	1.4	0.7	100

How Many Times Did Each Member Post? EDTECH November 1992

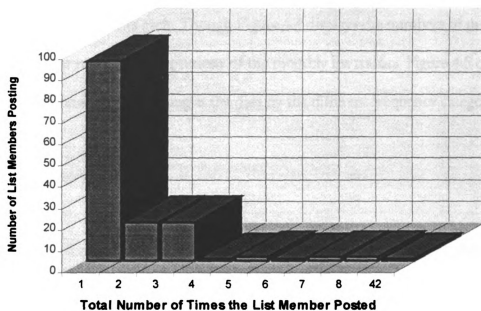
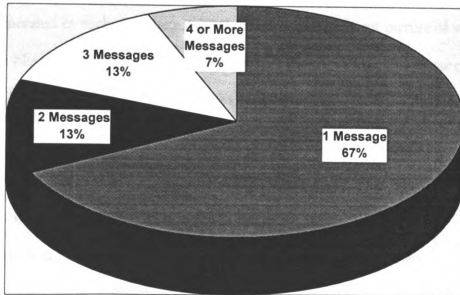


Figure 4.4 – Number of Times Each List Member Posted, Nov. 1992
(focus on participants)

Figure 4.4 shows that the number of people posting only one time far exceeds that of any other category. As well there appears to be a substantial additional drop at four or more postings. This drop in number of posters may make observations about those who post four or more times less certain, if they are considered individually, since there are so few in each numeric category. In order to more accurately discuss the more frequent participators, those who post 4 or more times will generally be placed in an aggregate group for comparative descriptions, as they are in Figure 4.5

From Figure 4.5 it can be seen that in November 1992 very few people posted more than 3 times (approximately 7% spread over several frequency categories). The vast majority (67%) posted only a single time, with 2 and 3 time posters comprising about 13% of participants each. Though Figure 4.4 displays the numbers of posters, it obscures their respective proportions of the monthly list traffic. Figure 4.5 offers a more proportional way of looking at the data by the different frequency categories of poster.

**How Many Times Did Each Category of Poster
Send a Message?
EDTECH November 1992**



N = 138 Nov. 1992 Posters

Figure 4.5 – Percentage of Postings by Categories of Poster, Nov. 1992

The tendency when viewing Figure 4.5 is to notice that the preponderance of posters posted only a single time, even though about a third of posters were multiple. This chart, while accurate as to numbers, may have the effect of making it appear that activity on the list was mostly comprised of a highly varied group of minimally participating people who showed little continuity of participation, at least on a week to week basis. That impression is not entirely accurate. Though the total number of those posting more than once is lower, each one posted more than one time, so their effect on the total list traffic, which is likely to influence the experience of other

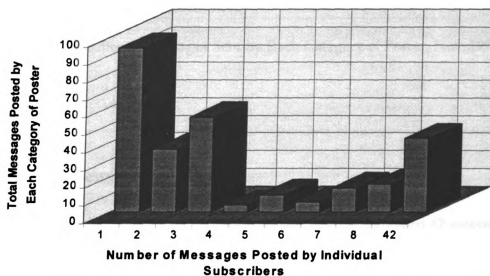
participants, is different than conclusions based on only counting numbers of participants might imply.

If number of participants in each category are multiplied by number of messages generated by each, and the results charted, a quite different picture of what happened in November 1992 on EDTECH emerges. Figures 4.6 and 4.7 show the weighted quantitative and proportional views that demonstrate the effect of considering frequency in terms of its impact on the total message flow on the list. These figures elaborate the information presented in Figure 4.4 to include the total number of messages posted by each category of poster.

As can be seen by comparing Figures 4.5 and 4.7, weighing to show proportions of messages, rather than proportions of posters gives a markedly different composition. Only about a third of message traffic was created by single posters and the single, 2-3, and 4 or more groupings carried almost equal weight in terms of numbers of postings. Figure 4.7 offers a picture of a discussion much more likely to indicate some sort of community or group feeling, with most of the traffic generated by people who would be recognizable because of their more frequent activity.

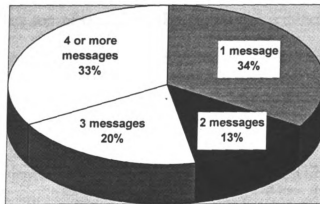
Number of Messages Sent by Each Category of Member										
EDTECH November 1992										
# of Messages Posted	1	2	3	4	5	6	7	8	42	Total
List Members	93	18	18	1	2	1	2	2	1	138
Total Messages Posted	93	36	54	4	10	6	14	16	42	275
% Total List Messages	33.8	13	19.6	1.5	3.6	2.2	5.1	5.8	15.3	100

**How Many Messages Did Each
Category of Poster Send?
EDTECH November 1992**



**Figure 4.6 - Number of Messages Posted by Individual Subscribers
(focus on messages)**

**How Many Messages Did Each Category
of Poster Send?
EDTECH November 1992**



N=275 Nov. 1992 Messages

Figure 4.7 - Number of Messages Sent by Each Category of Poster, Nov. 1992

Outlier in November 1992

In November 1992, there was a single participant who posted 42 messages. During this period, this subscriber was cross-posting (re-posting material previously posted on other lists) numerous messages to EDTECH and several other e-mail lists each month. In 1993 he went on to form a separate list for cross-posting interesting information found on the Internet, which he called Net-Happenings. At that time he essentially ceased his cross-posting activities on EDTECH. Though he remained an active reader of EDTECH, still forwarding copies of EDTECH messages to other

lists, his activity could be considered an anomaly of the earlier period, and does not substantially influence the list by 1995. Though postings of this participant certainly affected the climate of EDTECH during 1992, since there was seldom a reply to any of these messages, his postings might be thought of as a phenomenon separate from EDTECH itself, a sort of second, parallel list. Since it is difficult to determine whether these postings should be called fully a part of EDTECH or not, where relevant, descriptions of EDTECH will be rendered with and without the outlier data on these postings to allow for interpretation on either basis.

The November 1992 quantitative and proportional statistics as calculated with the outlier removed, are displayed in Figure 4.8 for comparative purposes. Since bar charts and participant oriented statistics would show little variation, if a single outlier participant were removed, only proportional, message based statistics were recalculated in this way. Removing the outlier causes a 12% decrease in the 4 or more message category, proportionately increasing all other categories by several percentage points. It indicates a list substantially more oriented to low-frequency posters overall than the statistics including the outlier would have implied.

Number of Times Each Category of Member Posted									
EDTECH November 1992									
# of Messages Posted	1	2	3	4	5	6	7	8	Total
List Members	93	18	18	1	2	1	2	2	137
Total Messages Posted	93	36	54	4	10	6	14	16	233
% Total List Messages	39.9	15.5	23.2	1.7	4.3	2.6	6.0	6.9	100

How Many Messages Did Each Category of Poster Send? (Outlier Removed)
EDTECH November 1992

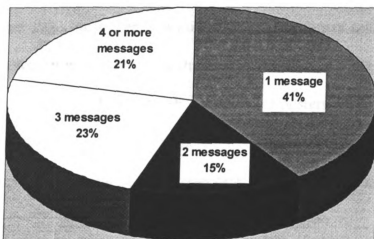


Figure 4.8 - Number of Times Each Category of Member Posted (Outlier Removed)

In summary, in November 1992, 67% of the posters only posted with a frequency of once per month or less. 26% were posting at an apparent frequency of 2-3 times per month, with less than 10% posting at a more frequent rate. The effect of the single anomalous poster wasn't obvious when considering the number of posters posting at various frequencies, but did shift several categories in a discernable manner when considering the number of messages posted.

November 1995 Frequency

In November 1995 there were 696 messages posted by 393 people to the EDTECH list. Figure 4.9 shows the November 1995 distribution of participants by frequency of posting. The outlier traffic was not as pronounced in this month as it was in November 1992. Since there was no real special category of outlier cross-postings, charts were not constructed to show the effect of eliminating the highest poster for November 1995. Figure 4.9 shows that most posters fell in the 1-3 frequency category with some activity at the 4-6 frequencies. The aggregate activity of all participants who posted 4 or more times only equaled approximately 8%.

Number of List Members Posting Various Numbers of Messages													
EDTECH November 1995													
# of Messages Posted	1	2	3	4	5	6	7	8	9	10	11	16	Total
List Members	260	71	29	12	5	7	1	2	1	1	3	1	393
% of List Members	66.2	18.1	7.4	3.1	1.3	1.8	0.3	0.5	0.3	0.3	0.8	0.3	100

**How Many Times Did Each Member Post?
EDTECH November 1995**

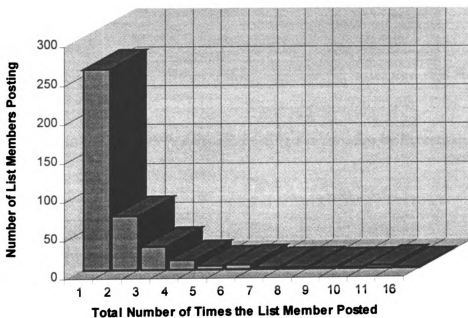


Figure 4.9 – How Many Times Did Each List Member Post?

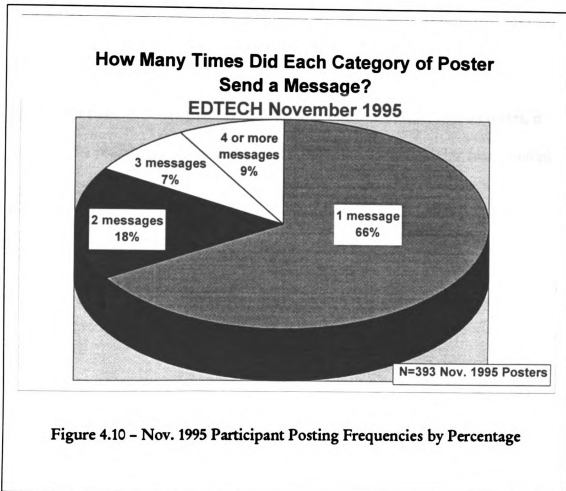


Figure 4.10 shows the proportions of participants who posted at the different frequencies represented. A substantial majority (67%) were people who posted only a single time in November 1995. Participants posted exactly two times in approximately the same frequency as they posted at all frequencies three or higher. The picture appears to represent a list with limited community aspects and a high rate of participation from less committed and frequent participants.

The information for November 1995 was recalculated and expanded to include information on the total number of messages posted by each frequency-category of poster in Figure 4.11 It then yields a different picture of activity on the list. Rather than a relatively smooth decrease as number of messages increases, it shows that a reader would experience considerable activity on the list from multiple posters.

Number of Messages Sent by Each Category of Member													
EDTECH November 1995													
# of Messages Posted	1	2	3	4	5	6	7	8	9	10	11	16	Total
List Members	260	71	29	12	5	7	1	2	1	1	3	1	393
Total Messages Posted	260	142	87	48	25	42	7	16	9	10	33	16	695
% Total List Messages	37.4	20.4	12.5	6.9	3.6	6.0	1.0	2.3	1.3	1.4	4.7	2.3	100

How Many Messages Did Each Category of Poster Send?
EDTECH November 1995

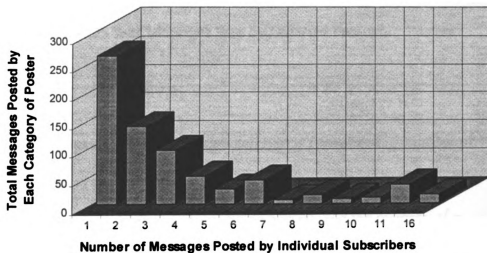


Figure 4.11 - Messages Posted by Each Category of Poster

**How Many Messages Did Each Category
of Poster Send?
EDTECH November 1995**

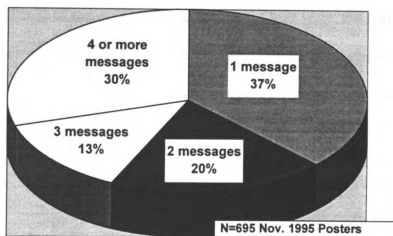


Figure 4.12 - % of Messages Sent by Different Frequency Posters

When the proportion of messages received is considered by number of messages, as well as category of poster, then one can see that only 37.5% of the messages in November 1995 were from single posters, and the majority of messages were from people who posted at least 2 times.

November 1996 Frequency

In November 1996 there were 896 messages posted by 431 people to EDTECH. Figure 4.13 displays the distribution of these messages over the 15

frequency categories represented. Figure 4.14 shows the relative proportions in the single, 2, 3 and 4 or more categories. There were participants with many more postings than others in this month, but since several people were involved and there is no indication that the postings were unusual or of a single class, no separate statistics were calculated to remove them as outliers. Once again, the pattern of approximately two thirds of the posters posting only a single time within the sample month held. The two and three time posters were still a visibly larger group than any of the categories of more frequent participants.

Number of List Members Posting Various Numbers of Messages																	
EDTECH November 1996																	
# of Messages Posted	1	2	3	4	5	6	7	8	9	10	11	13	17	22	24	Total	
List Members	283	62	32	17	13	1	6	2	2	3	3	4	1	1	1	431	
% of List Members	65.7	14.4	7.4	3.9	3.0	0.2	1.4	0.5	0.5	0.7	0.7	0.9	0.2	0.2	0.2	100	

**How Many Times Did Each Participant Post?
EDTECH November 1996**

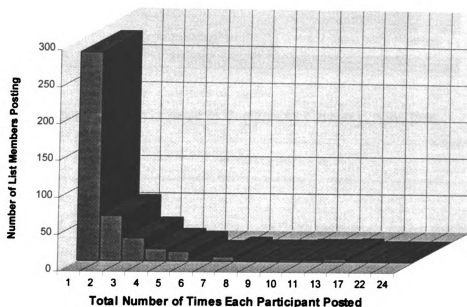


Figure 4.13 – How Many Times Did Each List Participant Post in Nov. 1996?

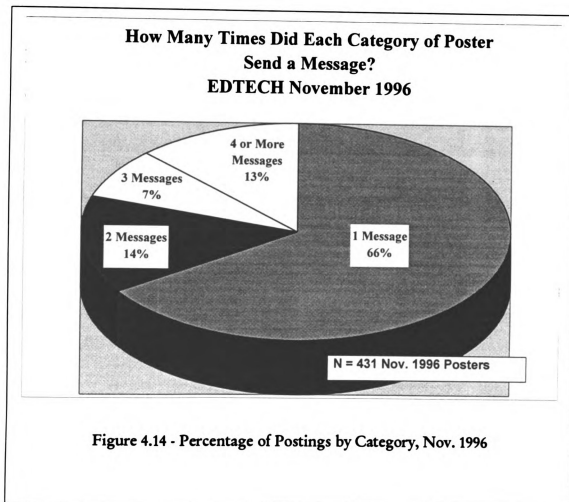


Figure 14.4 shows approximately two-thirds of participants were single posters, with 2 and 3 message posters responsible for about 25% of messages and the remainder in the 4 or more category. In order to see if previously shown trends hold when the month is considered by messages sent by participants, rather than by number of participants, the data was recalculated by messages (see Figures 4.15 and 4.16). As with other months, this makes a substantial difference in the apparent story told about the dynamics of the list. It points even more strongly toward the

appearance of a community of discussion, rather than isolated comments, with over 43% of messages coming from participants who posted more than three times.

Number of Messages Sent by Each Category of List Member

EDTECH November 1996

# of Messages Posted	1	2	3	4	5	6	7	8	9	10	11	13	17	22	24	Total
List Members	283	62	32	17	13	1	6	2	2	3	3	4	1	1	1	431
Total Messages Posted	283	124	96	68	65	6	42	16	18	30	33	52	17	22	24	896
% of Total Messages	31.6	13.8	10.7	7.6	7.3	0.7	4.7	1.8	2.0	3.3	3.7	5.8	1.9	2.5	2.7	100

How Many Messages Did Each Category of Poster Send? EDTECH November 1996

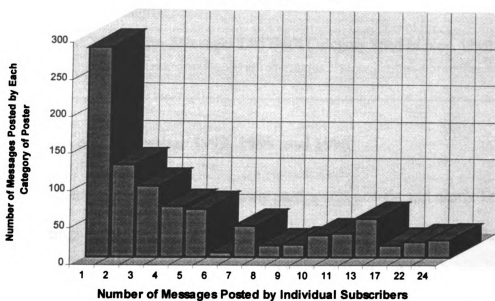


Figure 4.15 - Number of Messages Posted by Individual Subscribers

How Many Messages Did Each Category of Poster Send? EDTECH November 1996

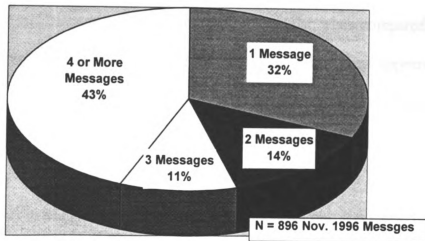


Figure 4.16 - How Many Messages Did Each Category Send in Nov. 1996?

Comparison of November 1992, 1995 and 1996

Since there were over 3 times as many participants posting and nearly 3 times as many postings in November 1995 and November 1996 as in November 1992, comparison of gross numbers of postings would only show that there were more messages in most postings categories 1995 and 1996. Comparison of various proportions of monthly postings, however, can illuminate whether the general pattern of participation seems to have varied between the three months. For this reason, the charts in Figures 4.17 and 4.18 concentrate on displaying comparisons of proportions

of postings in different frequency categories. As with a consideration of a single month, they also look at how the actual number of postings made by each category of poster compares.

As can be seen from Figure 4.18, the posting patterns for November 1992, November 1995 and November 1996 look remarkably similar, when compared with regard to percentages of total posters for the respective months. There appears to be some variation in the frequencies with which people posted exactly 2 and 3 times. As these categories may describe essentially the same sort of poster, probably the variation is not practically significant. Whether there is a real difference in overall participation level in EDTECH between someone who posts only twice or only three times will be investigated in more detail in later chapters. In all cases there is a clear drop at the four posting and above level, though there may be a trend toward greater frequency of posting in the later years of the study.

Summary of Number of Postings per Participant

EDTECH November 1992, 1995 & 1996

# of Messages Posted	1	2	3	4	5	6	7	8	9 or More	Total
1992 Posters	93	18	18	1	2	1	2	2	1	138
% Total Posters	67.4	13.0	13.0	0.7	1.4	0.7	1.4	1.4	0.7	100
1995 Posters	260	71	29	12	5	7	1	2	6	393
% Total Posters	66.2	18.1	7.4	3.1	1.3	1.8	0.3	0.5	1.5	100
1996 Posters	283	62	32	17	13	1	6	2	15	431
% Total Posters	65.7	14.4	7.4	3.9	3.0	0.2	1.4	0.5	3.5	100

How Many Times Did Each Participant Post? EDTECH Nov. 1992, 1995 & 1996 by Percentage of Total Monthly Postings

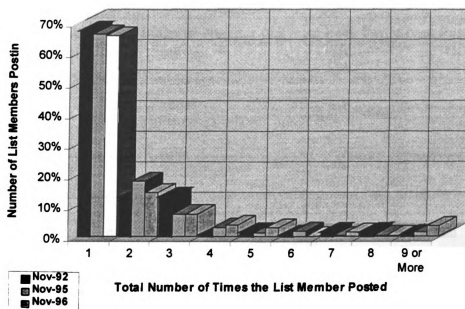


Figure 4.17 – Comparison of Nov. 1992, 1995 & 1996 Posting Patterns

Comparison of Number of Times Each Poster Sent a Message

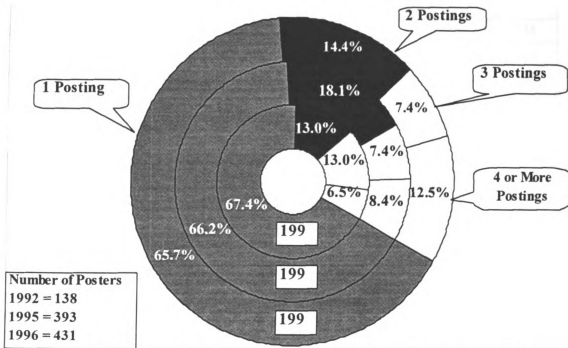


Figure 4.18 - Comparison of Number of Times Each Participant Posted

Figure 4.18 does not attempt to show comparative volume of messages, but instead illustrates comparative quantity of posters, who posted with differing frequencies. As experience of participation may be influenced more by actual messages received than by posters, the comparative data was reconfigured to illustrate message volume in Figures 4.19 and 4.20.

Summary of Number of Messages Members Posted

EDTECH November 1992, 1995 & 1996

# of Messages	1	2	3	4	5	6	7	8	9 or More	Total
1992 Posters	93	18	18	1	2	1	2	2	1	138
Total Messages	93	36	54	4	10	6	14	16	42	275
% of Total	33.8	13.0	19.6	1.5	3.6	2.2	5.1	5.8	15.3	100
1995 Posters	260	71	29	12	5	7	1	2	6	393
Total Messages	260	142	87	48	25	42	7	16	68	695
% of Total	37.4	20.4	12.5	6.8	3.6	6.0	1.0	2.3	9.8	100
1996 Posters	283	62	32	17	13	1	6	2	15	431
Total Messages	283	124	96	68	65	6	42	16	196	896
% of Total	31.6	13.8	10.7	7.6	7.3	0.7	4.7	1.8	21.9	100

How Messages Did Each Member Post? EDTECH Nov. 1992, 1995 & 1996 by Percentage of Total Monthly Postings

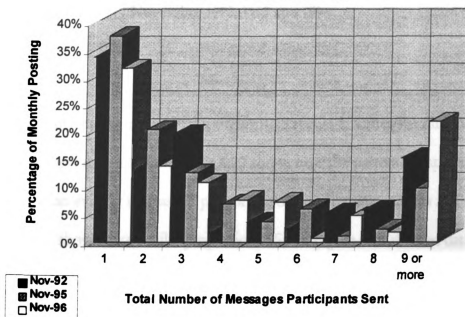
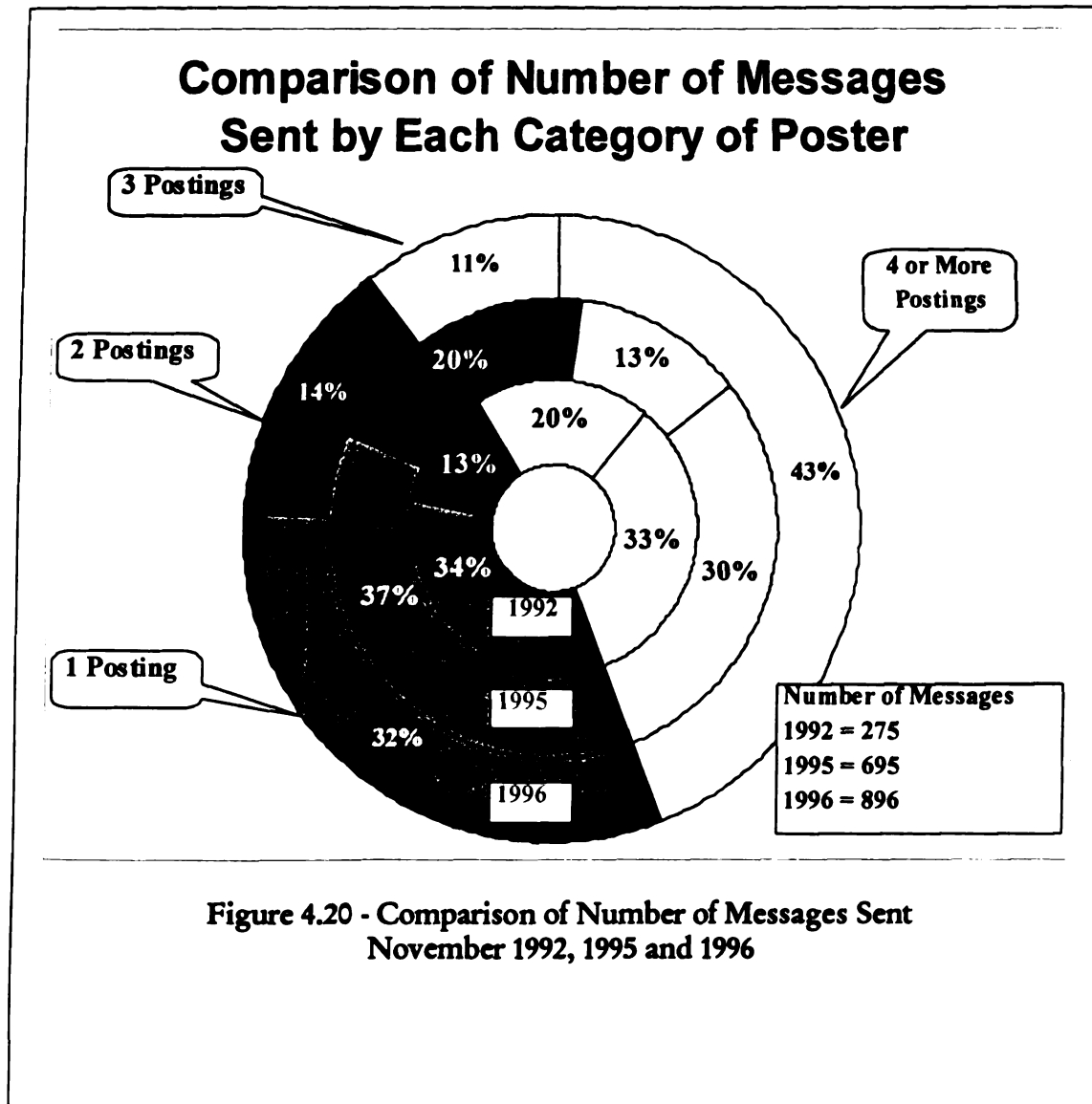


Figure 4.19 – Comparison of Nov. 1992, 1995 and 1996 Posting Patterns



Though interesting in the details, Figure 4.19 makes it somewhat difficult to perceive the comparative impact. Figure 4.20 shows how the pattern compared. Though there is an evident increase in proportion of non-frequent posters in 1996. Other categories show more similar proportions. Since Figure 4.20 showed data with the outlier 1992 participant included, it was recalculated. As Figure 4.21 shows, removing the outlier does affect the analysis. It only changes 1992, making the match

Comparison of Number of Messages Sent by Each Category of Poster (1992 outlier removed)

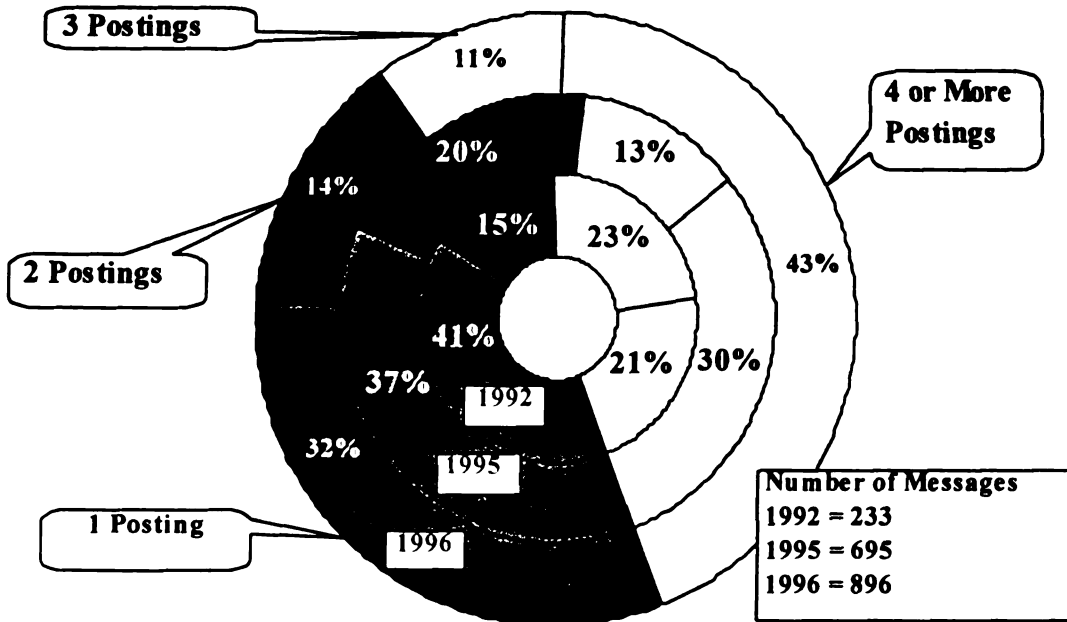


Figure 4.21 - Comparison of Number of Messages Sent (1992 outlier removed)

less clear on single posters, and more clearly indicating possible trend over time toward a larger percent of postings overall in the 4 or more category.

Conclusions and Areas for Future Study

The data tends to support the conclusion that EDTECH postings are distributed over a relatively consistent frequency pattern over time, particularly with regard to categories of participants who make the postings. Initial analysis of duration

(see Chapter 3) shows that there was little overlap in participants between 1992 and 1995, so the frequency of posting was probably not completely due to posting characteristics of specific individual list participants. In particular it indicates that about one third of the group who posts are multiple posters or more active participants. The pattern of variation in the data may be a phenomena of the list itself and how it varies with response to change in the field and methods of electronic communication.

Questions for Further Study

Due to the volume of messages, it is difficult to look at groupings of more than a few months. It is possible that additional sampling, more random sampling, and variations on sampling techniques would yield useful data to help researchers further understand frequency of posting on a discussion list like this and factors that might influence it. Some additional questions that might be researched include:

- Would the monthly percentages indicated in this Chapter remain the same if they were averaged over a consecutive three month period?
- Though this study shows frequency within a particular time frame, it doesn't indicate ongoing rate which could vary over time due to many factors. What would be shown by studying different slices of time, or consecutive slices?
- One could observe the cumulative frequency within the group as time increases. What percentage of 2 time posters would become 3 time posters if the period were extended another week? 2 weeks? 3 weeks?

- Would frequency be different in different months such as April or July?
- What are daily rates? Average daily frequency? Could a smaller sample be extrapolated into an equivalent pattern?
- Would the apparent pattern of 2/3 single posters hold if tested over a number of different months? If so, does this phenomena show up in other listserv groups? Other types of online groups?
- Is this frequency signature consistent with only EDTECH? Is it also displayed by other lists or other lists configured in similar ways? Which list configuration variables might affect it and how?
- Does the change in the number or type of topics discussed in a month affect the frequency of posting?

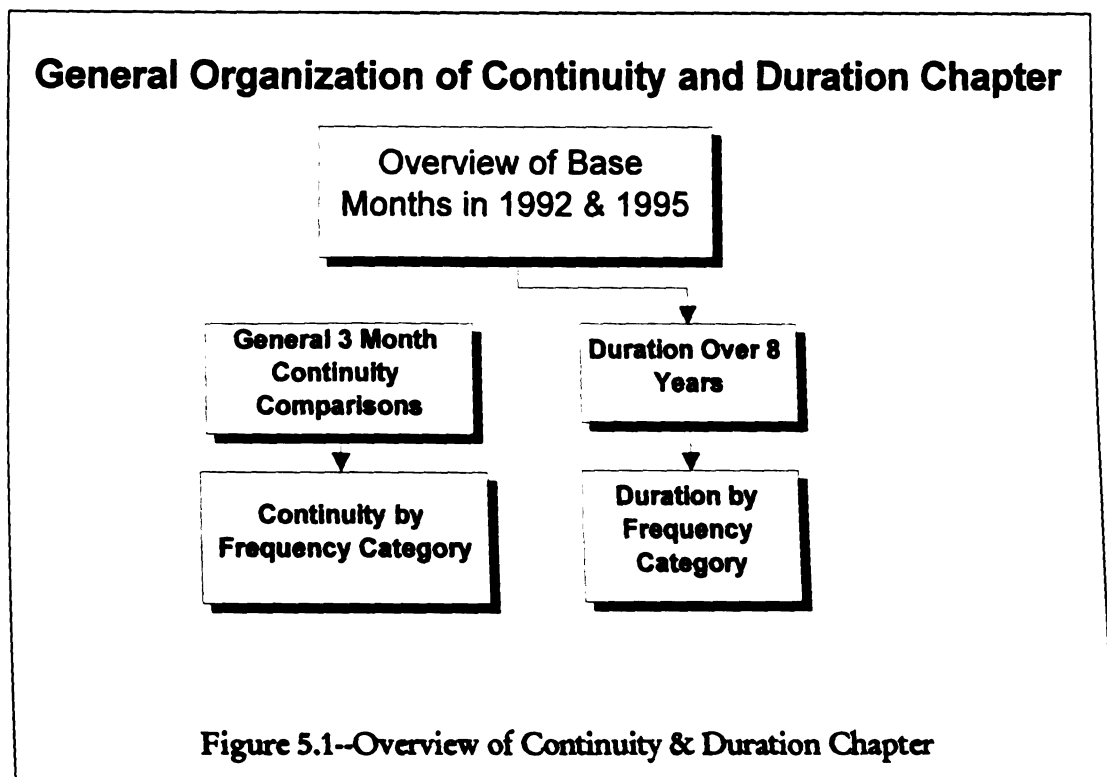
In summary, study of the three base months shows patterns in frequency of posting that appear to endure over time. Alone, it does not make clear what effect the medium and content of the discussion have on establishing these patterns, but it does open a rich area for additional research into frequency patterns on e-mail lists.

Chapter 5

CONTINUITY AND DURATION OF PARTICIPATION

Overview

In this chapter continuity and duration of participation in the EDTECH list are examined. In Figure 5.1 the general areas investigated in the chapter are outlined.



Continuity was analyzed over a 3 month period (a target month and the months immediately preceding and following it) and duration over an eight year period of EDTECH. This chapter discusses whether someone participating in the group or studying its archives, would find essentially the same set of people participating, from

month to month if looking at sequential months, or from year to year if surveying a more expanded time period. In addition, it refines findings on continuity and duration by breaking them into categories by frequency at which participants posted.

In particular in this study the question of whether people who post more frequently also tend to post over a greater length of time is examined. Whether continuity and duration patterns appear to remain consistent over time in EDTECH, irrespective of the number of participants and frequency of messages is also investigated.

There are numerous ways a researcher could examine continuity and duration. For example, one could select a target month, and look forward in time from it, or backwards in time. One could select different time frames than 3 months or a year, or measure several months as a group, without differentiating any single month as a target. The possible value of selecting a target, and then looking at time frames on either side of it, is to simulate the experience of a subscriber who may be reading list messages at any given point in time. To some extent it is possible that the way he/she values and integrates any given posting is influenced by how often and in what context the names of the same posters have appeared in the past, and also how often and in what way that topic has been discussed. After a topic has been discussed, the way people respond to it may be influenced by how recently they saw it before on the list, and what was said about it and by whom. People's recent experience with someone else on an e-mail list may, at least over the short term,

reflects how they will respond to the same person in the future. In the long term, it may impact how much they trust the content of the posting. As many people only participate in the EDTECH group for a short period of time, continuity would reflect their experience of participating in a coherent community over the short term. Three months is a time period similar to that found in a university or secondary school term. It indicates what a new subscriber to the list might observe during a relatively short encounter with it, or what a university student participating during a class might experience in terms of the consistency and diversity of the learning group. Several years is more a length a professional in the field might expect to participate in an e-mail list.

Continuity and duration can also be used as one of the ways measure aspects of diversity in an e-mail list. As with other configurations and time frames, whether a great diversity in participation is to be desired or not is open to debate. In a large, open-participation group, such as EDTECH, if there were not different people actively participating from month to month, it would imply stagnation in the group. During the time frame of this study, there were around 2000 active subscribers and 8-10 thousand or more newsgroup and bulletin board participants, plus a substantial WWW and Gopher readership in EDTECH. Less than 1000 messages were posted per month from between 200 and 400 individuals. From this one would expect a substantial percentage of diversity in posters during any given month, if wide participation from all possible posters were to be achieved. There is, however, no

agreed upon standard for how diverse this participation should be in order to indicate the widest range of people were being reached and feeling involved enough in the group to participate actively. If individual participation is too diverse and infrequent, no one participant would have the experience of familiarity and continuity with the others, or the assurance that there might be trustworthy people participating and willing to respond to inquiries. If it is not diverse enough, there will be a constraint on what is discussed and how, as the same population settles into familiar routines that in some way exclude or limit newcomers. Though this study cannot answer the question of what levels of diversity and change might be best, it can offer measures that could be further interpreted within the context of studies of additional lists.

Continuity for 1992 and 1995 Base Months

In order to calculate the continuity for posters in the two base months of November 1992 and November 1995 on EDTECH, lists of all the postings organized by subscriber were generated and total subscribers for these periods counted. (See Coding Sheet A in Appendix A for details on how the number of posters in each time period were determined.) For this study, continuity was analyzed through a range of one month on either side of the base months, i.e. October and December of the respective years. In order to accomplish this, listings of October and December for 1992 and 1995 were also generated. These listings were compared by number of postings, number of posters, and mean number of postings per poster. In addition, various comparisons of the two base months were made. Depending on

the date of the posting(s) made in November, comparing with the preceding and ensuing months represents a 30-60 day span of time from any individual the November posting. It should be emphasized that all calculations are based on the respective Novembers and comparisons with them. If percentages and other statistics were calculated based on October or December, different results might be found. Figure 5.2 summarizes the overall counts and percentages of postings and posters during the base months.

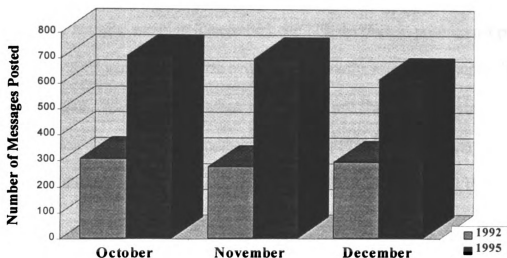
Postings & Posters -- 1992 & 1995			
	Oct. 1992	Nov. 1992	Dec. 1992
Total Postings	306	275	293
# of Posters	155	138	144
Average # of Postings/Poster	1.97	1.99	2.03
	Oct. 1995	Nov. 1995	Dec. 1995
Total Postings	706	696	616
# of Posters	402	393	340
Average # of Postings/Poster	1.76	1.77	1.81
Figure 5.2- Summary of Posters and Postings over 3 Months			

In order to more clearly represent and compare these months, charts were generated of the participant and posting information. Figure 5.3 shows the graphical patterns of postings and posters. Note that the scale is different on the two charts, since there were many more postings than posters. As the chart shows, the pattern is

quite similar across the years in the relationship between postings and numbers of posters when the charts are proportionally scaled.

As Figure 5.3 shows, there was a considerable change between November of 1992 and November of 1995 in postings, with less than half the number of postings in November 1992, that were made in November 1995. There were also less than half the number of posters in November 1992 than in November 1995, with the number of posters in each month showing an additional approximately 5% decrease over the decrease in the number of postings.

Number of Postings Three Months in 1992 vs. 1995



Number of Participants: Three Months in 1992 vs. 1995

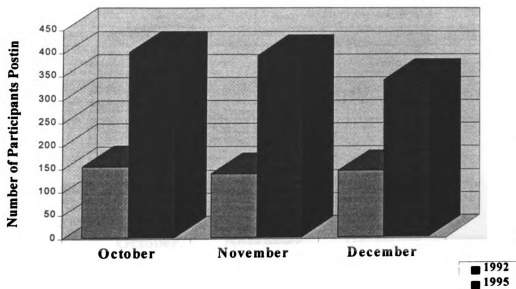
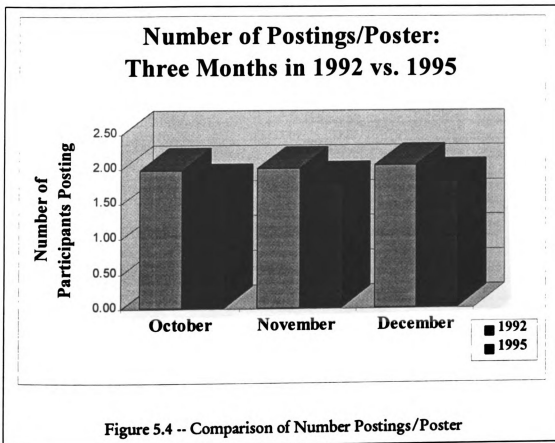
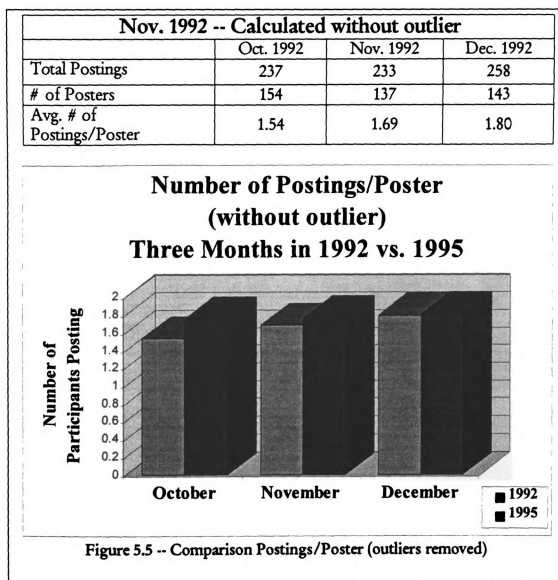


Figure 5.3 - Comparison of Number of Oct., Nov. & Dec. Postings

Over the 3 month period being studied, despite diversity in numbers of postings, the rate of postings/per poster remained quite constant. Differences in averages in each time frame were slight, and possibly if the comparison were controlled for seasonal variation (December), the 12% decrease in postings per poster from 1992 to 1995 would be uniform over all three months with a maximum half percent variation. Whether this decrease represents a real change in list behavior or is more a function of the increased number of posters in 1995 in some way, is difficult to determine without examining some of the cases individually. However, the change occurred, it appears to be consistent though.



As will be noted in various statistics in this study, there was an unusual outlier in 1992. One individual posted 69 times in Oct. 1992, 42 times in Nov. 1992, and 35 in Dec. 1992. Removal of the outlier shifts the relationship between the months over the 2 different years, showing 1995 with a slightly higher posting/poster ratio than 1992. Figure 5.5 displays this shift.



With or without the outlier, in general the averages are close. Since all of the type of information received might have affected people's willingness to participate, the full month totals including outlier will be used for more comparisons in this study. Figure 5.5 was calculated to point out there are factors in the list that do affect trends and which might be worth study in later research.

General Three Month Continuity Comparisons

After the initial totals for October, November and December were determined, the lists of people posting in November 1992 and November 1995 were correlated with lists of names of people posting in October and December of the respective years. As people may participate in general, but miss a particular month, or enter or leave the group in November, statistics were also calculated for those who posted in October OR November. To indicate how many showed a greater level of continuity over the span, a statistic for those who posted in all of October, November and December was also determined. (See Appendix A for details.) Figure 5.6 summarizes these findings.

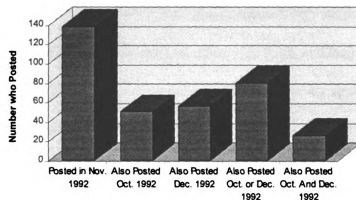
CONTINUITY COMPARISONS - EDTECH					
1992	POSTED IN NOV. 1992	ALSO POSTED IN OCT. 1992	ALSO POSTED IN DEC. 1992	ALSO POSTED OCT. OR DEC. 1992	ALSO POSTED IN OCT. AND DEC. 1992
# of Posters	138	50	56	80	26
% of Nov. 1992 Postings	100.0%	36.2%	40.6%	58.0%	18.8%
1995	POSTED IN NOV. 1995	ALSO POSTED IN OCT. 1995	ALSO POSTED IN DEC. 1995	ALSO POSTED OCT. OR DEC. 1995	ALSO POSTED IN OCT. AND DEC. 1995
# of Posters	393	139	141	207	73
% of Nov 1995 Postings	100.0%	35.4%	35.9%	52.7%	18.6%

Figure 5.6 - Continuity Comparisons, November 1992 & 1995

The charts in Figure 5.7 display the comparisons of how the months November 1992 and November 1995 appeared. It should be noted that the scale of the y axis is different for the two months, as there were almost 3 times as many posters in Nov. 1995 as in Nov. 1992.

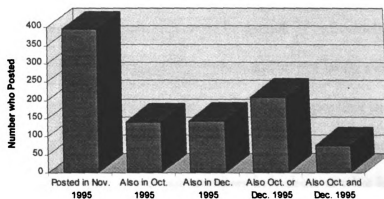
However, though the numbers of postings were very different in November 1992 and November 1995, the overall pattern looks remarkably similar. The charts were organized to show the three months in chronological order, with the statistic for all 3 months to the left and the statistic for either October or December to the right.

Continuity of Participation Based on EDTECH November 1992



Months when November Posters Made
Additional Postings

Continuity of Participation Based on EDTECH November 1995



Months when November Posters Made Additional
Postings

Figure 5.7 - Continuity of Participation in Nov. 1992 and Nov. 1995

Only about 35% of the individuals posting in a given month also posted a message in the preceding or succeeding month. Figure 5.7 illustrates the carry-over of posters for October and December individually appears very similar. When the wider time frame allowing a month span on either side (Oct. or Dec.) was allowed, it appears a substantial (over 15%) increase in one month longevity appears, or about 50% of participants remain active within a month of posting. In other words, of those who posted in November, over 50% posted again or had posted in October or December.

In order to give a more complete context, statistics were also calculated for those who posted in either the previous or the following month. When those who had posted in all three months (November, December AND October) were calculated however, a substantial drop was seen with less than 20% consistently posting in all three months. In part, this could be a result of individuals entering or leaving the group during the month of November, and so not being available to post during the month they were not subscribed. It also appears possible that many individuals who post do not do so for more than two consecutive months.

Though it is important to use raw numbers in looking at what happened in any individual month, since the absolute numbers of postings strongly affect the amount of information being carried by the group, as well as the experience of individual posters, it is possible that a more valuable comparison of the two months could be determined by charting the relative percentages of the base month.

Comparative Continuity of Participation Based on EDTECH November 1992 & 1995

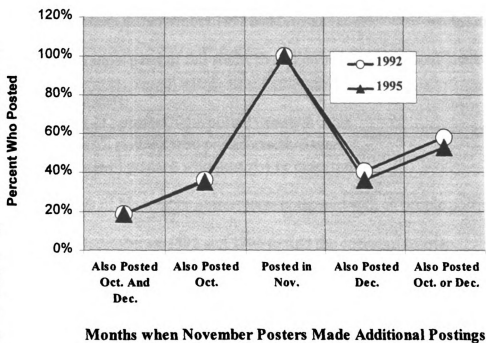


Figure 5.8 - Comparative Continuity

Certainly percentages more clearly illustrate the correspondence or difference in what happened in any two target months. Figure 5.8 compares the November 1992 & 1995 continuity by percentage. It displays graphs that look so remarkably similar that they tend to imply that there may be patterns of participation inherent in this list itself or lists in general, irrespective of time or particular participants.

Continuity by Frequency Category

In order to determine whether the likelihood of a person participating on a regular and continuing basis is influenced by the frequency of posting in any given time period, posters in November 1992 and November 1995 were divided into categories. For most parts of this study, the following categories were used.

- Single posters
- Multiple (2) posters, who posted exactly 2 times
- Multiple (3) posters, who posted exactly 3 times
- Multiple (4+) posters, who posted 4 or more times

These categories of November posters were compared with all people posting during October and December of 1992 and 1995 to find the degree of overlap.

Though there may be a difference between those who only post once and those who post more than once, as the number of postings increases and the frequency with which any individual posts a given number of times decreases, the variability in considering any class based on increased number of postings alone increases. Errors in counting, lost e-mail, e-mail that didn't get sent by the editor and other factors can disproportionately alter the results between categories of posters at the higher numbers. The multiple (2) and multiple (3) classess are less clearly distinct. They do serve to point at overall trends as numbers of postings increase and to help establish whether these seem to be major distinctions between multiple (2) and multiple (3) posters.

The tendency to post 5 vs. 6 or 7 vs. 8 times may not actually indicate much or be significant due to the variability inherent in small numbers of posters.

Nevertheless, it was felt that an aggregate category of 4 or more, might give a more accurate overall impression of the tendencies predicted by very frequent multiple posting behavior. The aggregate categories can be used to establish whether there appears to be a trend toward greater longevity with those posting more than with those posting less overall.

Continuity Comparisons

For purposes of illustration, single poster continuity will be described individually as well as in combination with that of multiple posters. The single posters were the most common category for EDTECH in November 1992 and 1995. It is possible that frequently single posters are frequently not regular subscribers, but are simply broadcasting an announcement or other information. Their rate of continuous posting may differ from those who post more than once in a given time period, and there may also be differences among categories of those who posted more than one time.

Single Messages by Poster		
	November 1992	November 1995
# of Posters	93	262
% of Total Poster	67.4%	67%
Single as a Percentage of Messages Posted		
# of Posters	93	262
% of Total Postings	33.8%	37.5%

Figure 5.9 -- Single Posters in Nov. 1992 & Nov. 1995

As Figure 5.9 shows, approximately 2/3 of the posers and over 1/3 of the messages came from people who posted only once in 1992 and 1995. In fact, the figures were remarkably similar over these 2 months.

SINGLE POSTSERS, EDTECH NOVEMBER 1992

	ALSO POSTED OCT. AND DEC. 1995	ALSO POSTED IN OCT. 1992	POSTED ONCE IN NOV. 1992	ALSO POSTED IN DEC. 1995	ALSO POSTED OCT. OR DEC. 1995
# of People	12	25	93	31	44
% of Total # of People Posting Once in Nov. 1992	12.9%	26.8%	100%	33.3%	47.3%

Continuity of Participation for Single Posters Based on EDTECH November 1992

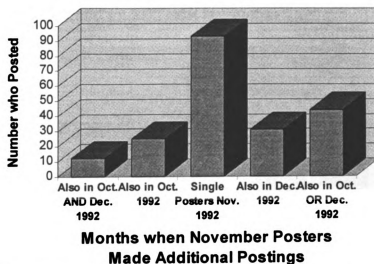
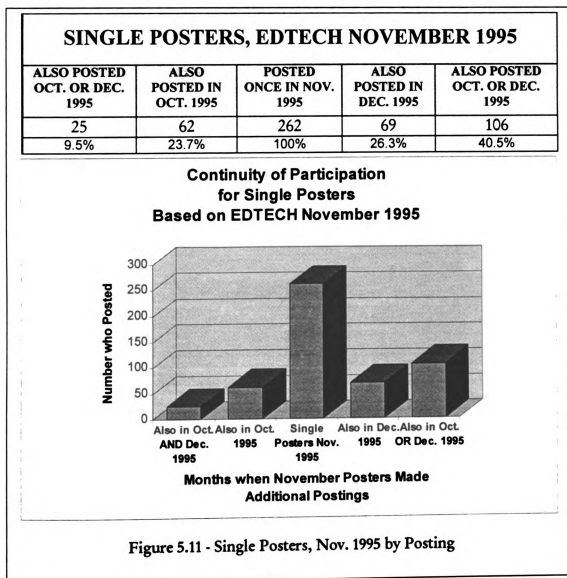


Figure 5.10- Single Posters, November 1992, Compared with Preceding and Following Months

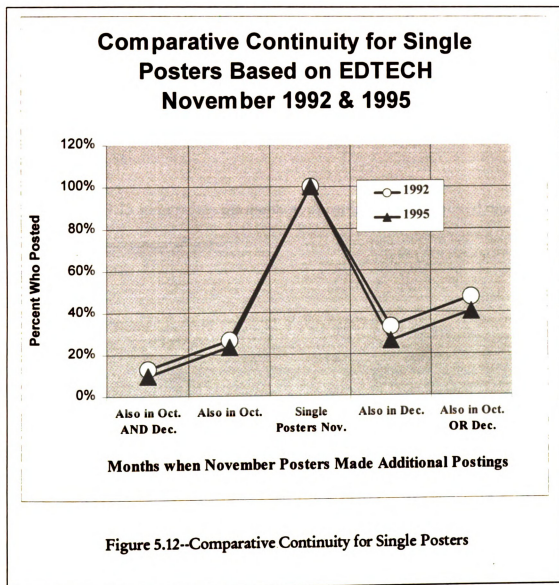
Of particular interest is the fact that single posters tend to be infrequent or one time only posters, with less than half posting in either the preceding or the

following months, and only 13% posting in both. Figure 6 shows the substantial difference between Nov. 1992 postings and overlap with other months.



For single posters, analysis of November 1995 indicates that if a person only posted one time in November of 1995, that person displays about a 10% less

likelihood of posting in October, November, or the longer span comprised of either October or November, than someone from the general population of posters would.



Continuity for Multiple Posters

Is the continuity or other posting patterns of those who post more than once different from those who post exactly once? There are a number of ways to characterize the posting patterns of a person who posts more than once in a month. In this section the continuity of posting for those who post exactly 2, 3, 4 or more times is considered to see if that differs from the pattern of those who only post once.

Figure 5.13 summarizes the numbers of participants who posted more than once during November of 1992.

Continuity for Multiple Powers

Is the continuity in other powers

different from those who have

characterized the position

in this section the con-

tinuity is considered in

one.

Figure 2.1

one during 1980

POSTINGS BY FREQUENCY, NOVEMBER 1992					
SINGLE	POSTED ONCE IN NOV. 1992	ALSO IN OCT. 1992	ALSO IN DEC. 1995	ALSO IN OCT. OR DEC. 1995	ALSO IN OCT. AND DEC. 1995
# of People	93	25	31	44	12
% People who Posted Once in Nov. 1992	100%	26.8%	33.3%	47.3%	12.9%
MULTIPLE (2)	POSTED 2 TIMES IN NOV. 1992	ALSO IN OCT. 1992	ALSO IN DEC. 1995	ALSO IN OCT. OR DEC. 1995	ALSO IN OCT. AND DEC. 1995
# of People	18	7	10	12	5
% of People who Posted 2 times in Nov. 1992	100%	38.9%	55.6%	66.7%	27.8%
MULTIPLE (3)	POSTED 3 TIMES IN NOV. 1992	ALSO IN OCT. 1992	ALSO IN DEC. 1992	ALSO IN OCT. OR DEC. 1992	ALSO IN OCT. AND DEC. 1992
# of People	18	12	10	16	6
% of People who Posted 3 Times in Nov. 1992	100%	66.7%	55.6%	88.9%	33.3%
MULTIPLE 4+	POSTED 4 OR MORE TIMES IN NOV. 1992	ALSO IN OCT. 1992	ALSO IN DEC. 1992	ALSO IN OCT. OR DEC. 1992	ALSO IN OCT. AND DEC. 1992
# of People	9	6	5	8	3
% People who Posted 4 Times in Nov. 1992	100%	66.7%	55.6%	88.9%	33.3%
TOTAL	POSTED IN NOV. 1992	ALSO IN OCT. 1992	ALSO IN DEC. 1992	ALSO IN OCT. OR DEC. 1992	ALSO IN OCT. AND DEC. 1992
# of People	138	50	56	80	26
% of those who Posted in Nov. 1992	100%	36.2%	40.6%	58.0%	18.8%

Figure 5.13 - Continuity for November 1992

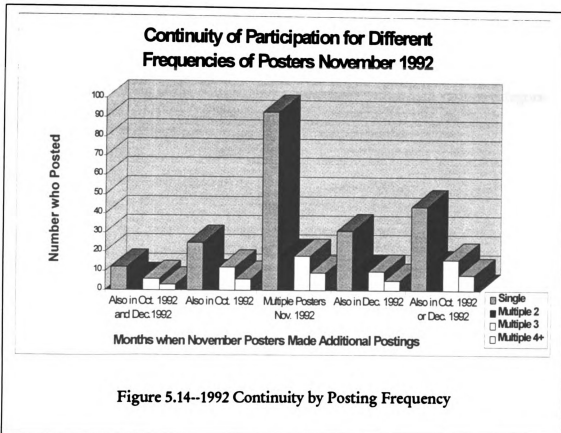


Chart 5.14 represents the numbers of postings in each frequency in graphical format. The multiple 2 and 3 statistics were gathered to determine if there appears to be a difference between those who post a small number of times, from the single poster category, and also from those who posted much more frequently. Only two postings does not necessarily indicate any sustained type of participation. They will also show if there appears to be any trend in posting behavior as the exact number of postings increases. The aggregate multiple (4+) posting figures would also indicate any such trend, but would be more influenced by the effects of the postings of the very active participants.

Though some trends can be observed, like the drop in most categories from single to multiple (4+) posters, observing the raw data does not give as clear of an impression as looking at the comparative percentages with which various categories of poster continue to post.

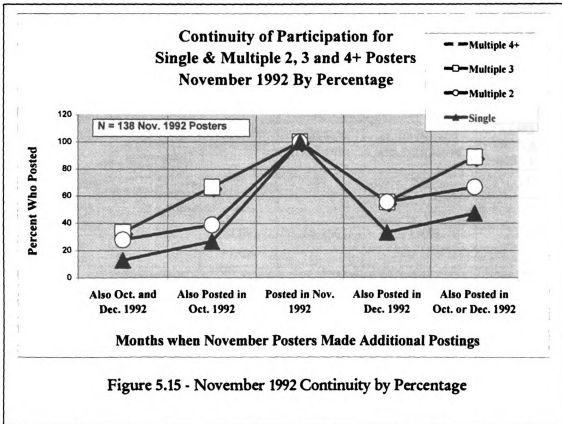
Though some trends can be observed in the

angle to multiple (+) points, observation

improves as looking at the same point

of points continues to grow

Figure 5.15 contrasts the percentages for each frequency category of poster.



The multiple (4+) poster percentages for 1992 were exactly the same as the multiple (3), so the plot overlaps. It displays more clearly the trend toward higher numbers of postings and greater continuity. This trend is further emphasized by analysis of the November 1995 numbers in Figures 5.16 and 5.17.

POSTINGS BY FREQUENCY, NOVEMBER 1995					
SINGLE	POSTED ONCE IN NOV. 1995	ALSO IN OCT. 1995	ALSO IN DEC. 1995	ALSO IN OCT. OR DEC. 1995	ALSO IN OCT. AND DEC. 1995
# of People	260	62	69	106	25
% of those who Posted One Time in Nov. 1995	100%	23.7%	26.3%	40.5%	9.5%
MULTIPLE (2)	POSTED 2 TIMES IN NOV. 1995	ALSO IN OCT. 1995	ALSO IN DEC. 1995	ALSO IN OCT. OR DEC. 1995	ALSO IN OCT. AND DEC. 1995
# of People	71	35	31	50	15
% of those who Posted 2 Times in Nov. 1995	100%	50.0%	44.3%	71.4%	21.4%
MULTIPLE (3)	POSTED 3 TIMES IN NOV. 1995	ALSO IN OCT. 1995	ALSO IN DEC. 1995	ALSO IN OCT. OR DEC. 1995	ALSO IN OCT. AND DEC. 1995
# of People	29	16	14	19	11
% of those who Posted 3 Times in Nov. 1995	100%	53.3%	46.7%	63.3%	36.7%
MULTIPLE (4+)	POSTED 4 OR MORE TIMES IN NOV. 1995	ALSO IN OCT. 1995	ALSO IN DEC. 1995	ALSO IN OCT. OR DEC. 1995	ALSO IN OCT. AND DEC. 1995
# of People	33	26	26	31	21
% of those who Posted 4 Times in Nov. 1995	100%	78.8%	78.8%	93.9%	63.6%
TOTAL	POSTED IN NOV. 1995	ALSO IN OCT. 1995	ALSO POSTED IN DEC. 1995	ALSO IN OCT. OR DEC. 1995	ALSO IN OCT. AND DEC. 1995
# of People	393	139	141	207	73
% of those who posted in Nov. 1995	100%	35.4%	35.9%	52.7%	18.6%

Figure 5.16 - Continuity for November 1995 Postings

POSTINGS BY FREQUENCY				
SINGLE	POSTED ONCE IN NOV. 1992	ALIAS IN OCT. 1992	POSTED ONCE IN NOV. 1992	POSTED ONCE IN NOV. 1992
# of People	280			
# of those who Posted One Time in Nov. 1992	100%			
SEATTLE (3)	POSTED ONCE IN NOV. 1992			
# of People	2			
# of those who Posted 2 Times in Nov. 1992				
SEATTLE (3)	POSTED ONCE IN NOV. 1992			
# of People	2			
# of those who Posted 3 Times in Nov. 1992				
SEATTLE (3)	POSTED ONCE IN NOV. 1992			
# of People	2			
# of those who Posted 4 Times in Nov. 1992	100%			
TOTAL	POSTED IN OCT. 1992	POSTED IN OCT. 1992	POSTED IN OCT. 1992	POSTED IN OCT. 1992
# of People	302	139	141	202
# of those who Posted in Nov. 1992	100%	32.4%	38.8%	85.7%
				18.0%

Figure 5.16 - Community for November 1992 Postings

Continuity of Participation for Different Frequencies of Posters November 1995

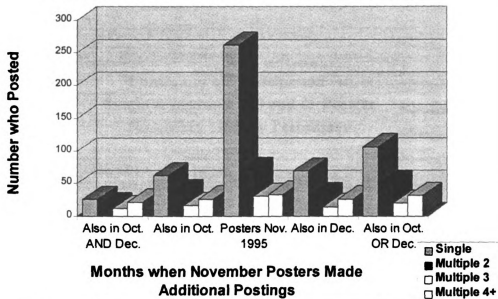
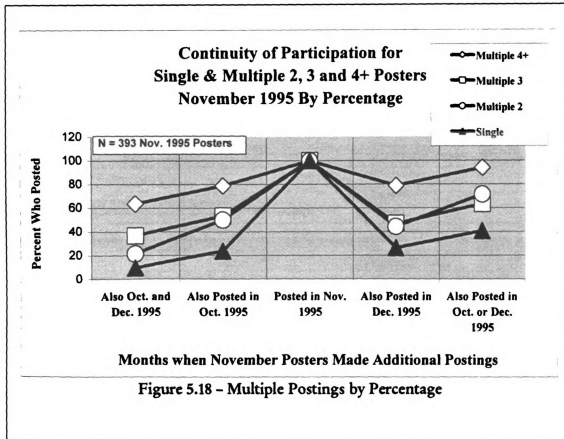


Figure 5.17 – Continuity by Number of Postings -- Nov. 1995

As can be seen in Figure 5.17, continuity for those who posted exactly twice in November 1995 was markedly higher than that of single posters, 26% for October, 18% for December and 30% for the October/December aggregate. They do not reach the same levels of continuity as those who post three or more times though (see Figure 5.15) since they post 15% less on individual months, though only 8% less for the combination.

Figure 5.17 might be misleading however in that it appears to show that continuity is higher among the participants who posted exactly 2 times, than it is for those who posted more. When viewed by percentages, Figure 5.18 gives another view of the relationship between the multiple 2, 3 and 4+ posters. It examines what

percentage of those who posted a given number of times also posted in the previous and ensuing months.



The trend toward greater continuity of participation for those who post more in a given month continued to increase as the number of postings in the base month, November 1995 increased. When continuity was calculated with those who posted 4 or more times (multiple 4+) in November 1995, those who posted in October, November and October or November showed an additional 13-16% increase over those who posted 3 or more times. This may indicate that there is a shift in

continuity at around the Multiple (4+) level , a level which would indicate a posting a week on the average.

Duration over Eight Years

Duration is similar to continuity but focuses on continued participation by an individual over a range of time. For purposes of this study, duration looks at evidence of continuing participation in the e-mail group for one year or longer. Continuity statistics indicated how familiar a participant might find others in the group during a short period of time. Duration, though it may also reflect this, is an indicator of long-term participant satisfaction and of the development and maintenance of an expert cadre within the group (people who have participated in the group for a greater length of time).

Though there are many possible ways of looking at duration, in this study duration was calculated bi-directionally in time. In other words it was calculated using the preceding as well as ensuing years in order to derive data on if people participating in any given year still participated in the future, as well as were participating in the past. Since duration can be considered in both the past and the future, it can only be calculated with respect to a specific point in time. This section will discuss duration with respect to November 1992 and November 1995 participation over several years. For consistency with other parts of the study, the base months of November 1992 and 1995 were used and contrasted with Novembers in other years for which data was available. Figure 5.18 summarizes the numbers of

continuity is around the Multiple (++) level, a level that is

weak on the average.

Duration over Eight Years

Duration is similar

individual over a range

of continuing patterns

mainly indicated by

short period of time

long-term patterns

expert cases which

greater length of time

Though, the

duration was calculated

using the preceding

participating in any given

participating in the past, since one can move in and out of the

here, it can only be calculated with respect to a specific point in time. This section

will discuss duration with respect to November 1992 and November 1993

participation over several years. For consistency with other parts of the study, the

last months of November 1992 and 1993 were used and contrasted with November

in other years for which data was available. Figure 2.12 summarizes the numbers of

postings and posters, and average of postings/poster for each November between 1989 and 1996.

As Figure 5.19 shows, EDTECH postings increased yearly between 1990 and 1996, showing the most marked increase between 1993 and 1994. The 1992 and 1995 base months should help point out any differences in overall EDTECH participation that occurred at the time of the large increases during 1994-5. Despite these increases, postings/poster have not markedly varied since 1992, remaining at about $2 \pm .25$. This may indicate a stability in the type of participation on the list, irrespective of the subscribers themselves.

points and points, and average of points.

1989 and 1994

As Figure 2.19 shows

1994 showing the most

1995 has months about

participation that occur

these increased, points

about 2 ± .25. The

respective of the

EDTECH Postings in November 1989-1996								
	Nov. 1989	Nov. 1990	Nov. 1991	Nov. 1992	Nov. 1993	Nov. 1994	Nov. 1995	Nov. 1996
Number of Messages	128	77	186	275	357	732	696	896
Number of Posters	67	57	119	138	205	358	393	409
Messages per Poster	1.91	1.35	1.56	1.99	1.74	2.04	1.77	2.19

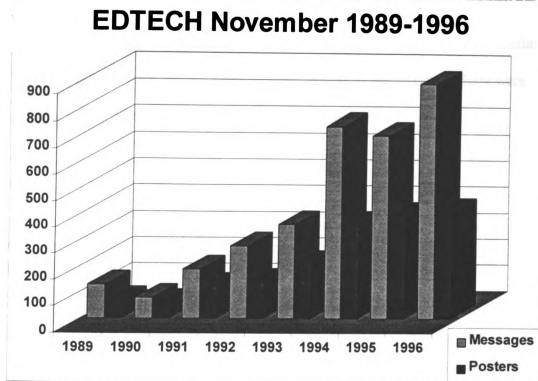


Figure 5.19 -- Messages and Posters in November over 8 Years

There is a technical difficulty making comparisons of duration, as the numbers of messages in the target months were not the same, nor were the numbers of people posting. Controlling for either of these variables might affect the outcome of statistical data presented. On the other hand, from the point of view of learning, the

entire experience of posters includes frequency and immediacy of posting and response. A different incidence of repeat posting from one year to another might show up if the numbers of posters or postings between two months were equalized. So expanding the time frame for comparison on earlier data in order to equalize the number of postings being compared might also distort the data with respect to how and why the communications were delivered as they were. Therefore, analysis was conducted using the single month of November over this 8 year period, to examine what that might indicate about duration of participation, even though there were varying numbers of posters and postings in different years.

November 1992 Base Month

Also in Nov. 89	Also in Nov. 90	Also in Nov. 91	Nov. 1992	Also in Nov. 93	Also in Nov. 94	Also in Nov. 95	Also in Nov. 96
8	10	18	138	33	16	8	5
5.8%	7.2%	13.0%	100%	23.9%	11.6%	5.8%	3.6%

**Duration of Participation
Based on EDTECH November 1992**

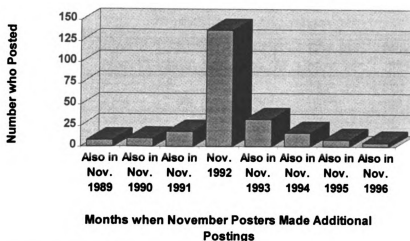


Figure 5.20 -- Duration based on November 1992

When the names of November 1992 posters were matched with the names of posters in November of other years, the results shown in Figure 5.19 were obtained. They show a quick drop-off to about 10% continued participation over 2 years and a residual participation of around 5% more than 2 years from the target month. The numbers drop more steeply looking toward the past. Nearly a quarter of the participants were still posting a year after the November 1992 base month. It appears

that current participation indicates duration more strongly for the future, than it reflects past activity.

November 1995 Base Month

When the figures were recalculated to make November 1995 the base month, the statistics in Figure 5.21 were generated.

Also in Nov. 89	Also in Nov. 90	Also in Nov. 91	Also in Nov. 92	Also in Nov. 93	Also in Nov. 94	Nov. 1995	Also in Nov. 96
5	5	9	8	16	54	393	71
1.3%	1.3%	2.3%	2.0%	4.1%	13.7%	100.0%	18.1%

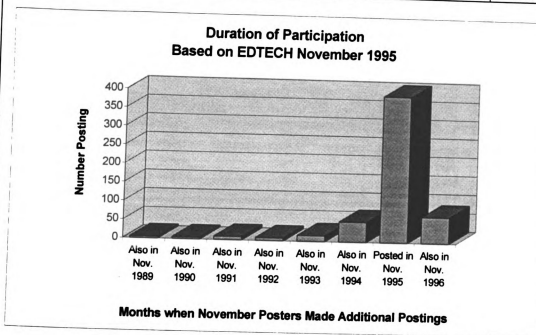
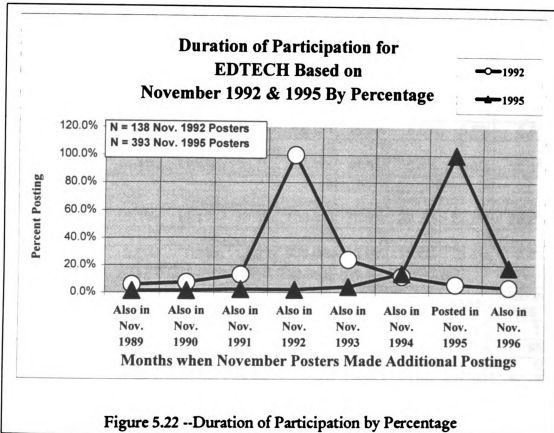


Figure 5.21 - 1995 Duration for November Over 8 Years

As can be seen, there is a considerable drop-off in duration of participation with only 18% of the November 1995 posters also appearing in the November 1996

logs. Though the percentages seem a bit lower in November of 1996 than in November of 1992, this may be related to the increased numbers of single posters, rather than to a real difference in long-term participation.



Since there were unequal numbers of postings overall in 1992 and 1995, to more effectively compare the results, the numbers were converted to monthly postings and charted together. Though the nodes fall in different years in the charts above, the general pattern appears to be quite similar for each with a sharp drop-off during the first year, some additional drop-off in the second, and a residual number of long-term posters remaining.

Duration by Frequency Category

Detailed statistics were compiled for each of the major frequency categories of posted studied (single, multiple (2), multiple (3) and 4 or more).

EDTECH Duration Based on Nov. 1992								
	Also in 1989	Also in 1990	Also in 1991	1992	Also in 1993	Also in 1994	Also in 1995	Also in 1996
One Posting	3	3	10	93	12	12	4	0
% of 1992	3.2%	3.2%	10.8%	100.0%	12.9%	12.9%	4.3%	0.0%
2 Postings	2	4	2	18	7	1	1	1
% of 1992	11.1%	22.2%	11.1%	100.0%	38.9%	5.6%	5.6%	5.6%
3 Postings	2	2	3	18	7	1	1	2
% of 1992	11.1%	11.1%	16.7%	100.0%	38.9%	5.6%	5.6%	11.1%
4 or More Postings	1	1	3	9	7	2	2	2
% of 1992	11.1%	11.1%	33.3%	100.0%	77.8%	22.2%	22.2%	22.2%
Total	8	10	18	138	33	16	8	5
% of 1992	5.8%	7.2%	13.0%	100.0%	23.9%	11.6%	5.8%	3.6%
EDTECH Duration Based on Nov. 1995								
	Also in 1989	Also in 1990	Also in 1991	Also in 1992	Also in 1993	Also in 1994	1995	Also in 1996
Single	2	2	4	4	10	22	262	31
% of 1995	0.8%	0.8%	1.5%	1.5%	3.8%	8.4%	100.0%	11.9%
2 Postings	1	2	2	2	3	14	70	15
% of 1995	1.4%	2.8%	2.8%	2.8%	4.2%	19.7%	100.0%	21.1%
3 Postings	0	0	1	1	0	4	29	6
% of 1995	0.0%	0.0%	3.4%	3.4%	0.0%	13.8%	100.0%	20.7%
4 or More Postings	2	1	2	1	3	14	32	18
% of 1995	6.3%	3.1%	6.3%	3.1%	9.4%	43.8%	100.0%	56.3%
Total	5	5	9	8	16	54	393	71
% of 1995	1.3%	1.3%	2.3%	2.0%	4.1%	13.7%	100.0%	18.1%

Figure 5.23 -- Duration by Frequency Category

Listings of postings organized by poster were generated for each November from 1989 to 1996. Then posters were correlated and notations made of names which appeared in the target month and also in other years. Counts were not only of the totals but also divided by people who posted exactly one, two or three times, and those who posted 4 or more times in the given month. In all cases, participation in a given year seems to predict a higher degree of participation in the ensuing year than in the preceding one. This tendency seems more marked in 1992 than in 1995, perhaps since in general the degree of Internet participation was increasing more in 1992 than in 1995, and there were less options like the WWW available to lure participants into other avenues for information gathering. It should be noted that beyond one year and in all calculations of multiple posters, the raw numbers are so low as to cast doubt on their accuracy, except as general indicators of trends, since in various cells of the table a variation of even one poster would alter the effect shown.

Rankings of points organized by year from 1989 to 1996.

from 1989 to 1996. Then points were ranked

which appeared in the target month.

the month but also divided the

those who point 4 or more

given year seems to point

in the preceding one

perhaps since in 1989

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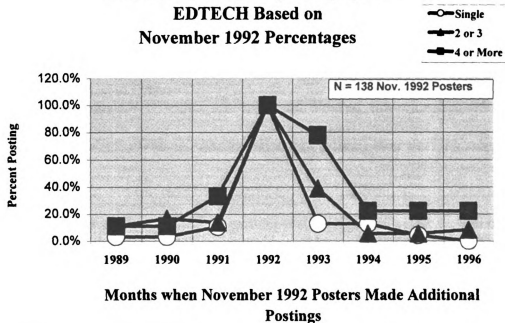
participants into two

period one year

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**Duration by Frequency Category for
EDTECH Based on
November 1992 Percentages**



**Duration by Frequency Category for
EDTECH Based on
November 1995 Percentages**

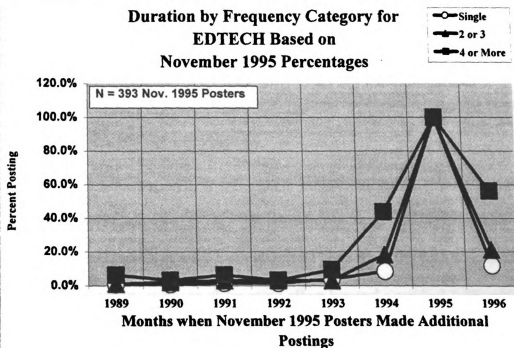


Figure 5.24 - Duration by Frequency Category

With single posters, there is a very large drop in duration even in the first year. Rather than receding to 10% over two years, it appears to do this very rapidly. Even in the first month, the continuity study showed a drop to between 25-33% in 1992 and to around 25% in 1995 for single posters. It appears that the evidence of this steep decline is even more pronounced over a year. Posting only once then seems to indicate that it is quite unlikely the person will still be posting over any long range of time.

Trends with multiple (2) and (3) posting participants aren't clear though in general both show a higher duration than single posters and lower than those who post four or more times. The multiple (2) posters show approximately double the longevity that the single posters do at the one year range. Though in Figure 5.24 the multiple (2) and multiple (3) categories are separated to examine possible trends, they are grouped for charting, as it is more likely they point at a single class of poster than separate classes. As with other categories of posters, the forward longevity toward 1996 is greater than the reverse longevity.

The multiple (4+) category shows very interesting results, with over double the duration rate of any other category at the one year range and higher results at most other posting times as well. Even at several years from the base month, the Multiple (4+) category seems to show some effect beyond a residual 2-5% which may indicate this is phenomena of increased posting levels is worth further studying. It would appear the posting of at least 4 times, a participant evidences a sufficient

commitment to the list or participation that ongoing involvement for at least a year can be assumed (though a drop-off or 20-50% is still seen in this category.)

Summary, Conclusions and Areas for further Study of Duration

Overall, there were few overlapping participants in Nov. 1992 and Nov. 1995. The general posting patterns were quite similar, showing a typical pattern of shift in participants over time, and typical patterns within frequency categories of posters. This lends credence to the conclusion that topic and general setup of the list plus the small number of continuing posters are sufficient to largely influence the dynamics of the list.

More frequent posting seems to predict a higher percentage of repeat posters in the future. Posting in the present appears to indicate more strongly that a person will post in the future than that the person did post in the past.

Areas for Further Study

November 1992 and November 1995 show some differences. Some of the following questions could be analyzed. Was there a gradual shift or an abrupt one? What events precipitated these changes? Was it only the general increase in Internet participation, or were other important factors involved?

In addition to the charts included here, one could chart:

- Additional continuity, especially at 2 , 3 and 6 months.
- Continuity from week to week
- Continuity via other set # of message spans, rather than time spans.

- Continuity via other categories, such as gender, location/node, and those who ask specific kinds of questions, or generate specific kinds of postings.
- Variation in reduction rates during different spans of time.
- Differences in reduction patterns among different types of posters.

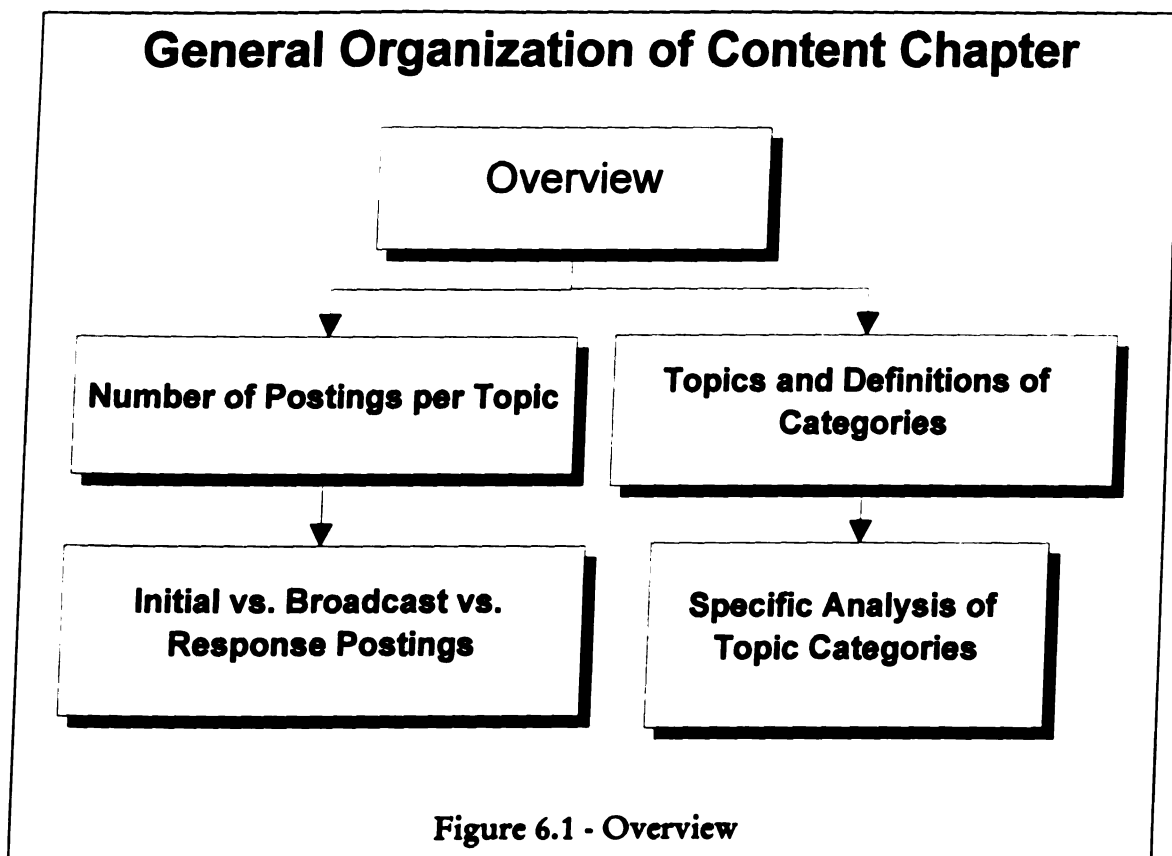
From the November 1995 data, it appears that study of duration for more than 2 years isn't very useful, since the amount of overlap in participants beyond 2 years is so low. Study of the types of messages of those who do remain might be useful though.

Chapter 6

CONTENT

Overview

In this chapter the activity on EDTECH is analyzed from the point of view of messages and their content, describing the number of postings per topic. In particular there is a look in greater depth at categories of postings seen on the list and how they compare at two different points in time.



In the study there is a focus on groups or threads of messages initiated in each of the target months and their continuations, if the conversations continued during the ensuing month. Also considered are all messages posted during certain periods of time in the month, regardless of when the conversation was initiated.

Consideration is given to the intent, commitment or general conversational thrust of groups of messages by making distinctions similar to certain of the ones put forward by Flores and Winograd (1997), and observing how the percentages of messages in categories differ over time. The reason for doing a more in-depth analysis of classes of messages with different intent is to attempt to expand beyond a single-list/subject context and offer insights that may more readily apply to additional lists. From looking at topics covered, one can get a general notion of the type of list it is. What happens on the list as it might relate to what happens on scholarly lists with a different purpose is not as clear without observing a list at a level beyond the stated subjects of the messages.

Number of Postings Per Topic

One of the more interesting considerations in studying content on an e-mail list is the number of responses that any given topic of discussion generates. This section offers an overview of what was discussed on EDTECH and how extensive the discussion was on each subject. In order to give the reader a general picture of what was being discussed in November 1992 and 1995, the messages in each sample period were grouped by subject and arranged in tables according to the number of messages in each discussion thread (see Figures 6.4 - 6.8). Figures 6.2 and 6.3 summarize this information on numbers of postings per topic.

Number of Postings per Topic											
(Topics Initiated in November 1992)											
1	2	3	4	5	6	7	8	9	10	11	12+
72	12	5	3	4	4	3	0	1	0	0	4
(Topics Initiated in November 1995)											
1	2	3	4	5	6	7	8	9	10	11	12+
110	55	30	21	9	10	7	2	4	3	5	4

Figure 6.2 - Summary of Number of Postings per Topic

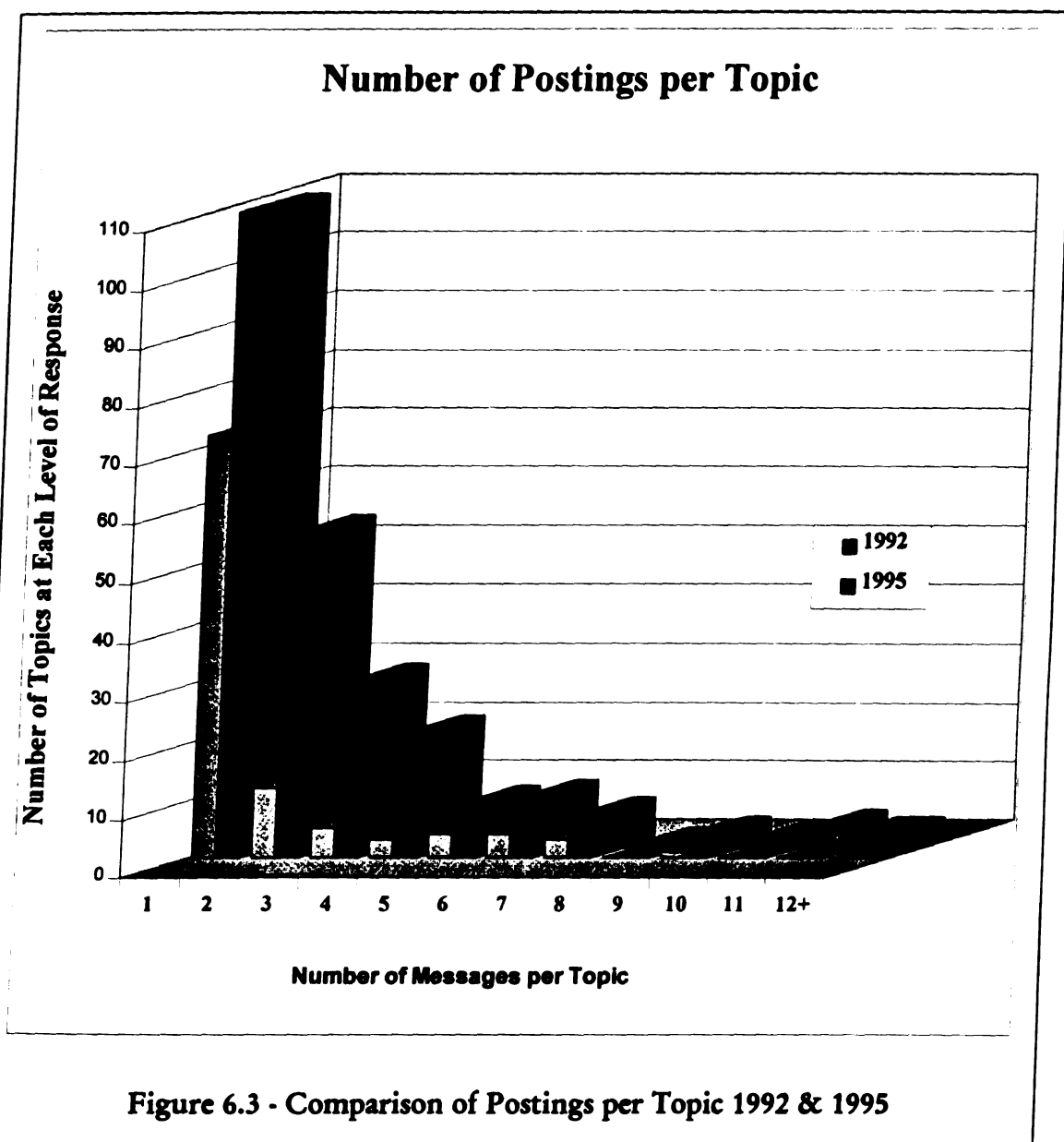


Figure 6.3 shows that most topics received no or limited response on the EDTECH list itself, though it appears that by 1995 a greater percentage of topics were receiving higher numbers of responses, possibly due to increase

in list size or the increasing willingness of participants to engage in more lengthy discussions.

EDTECH -- Topics with 4 or more messages that began in November 1992	
1. Raising national IQ (23) 2. DOS BACKUP (17) 3. Simple/cheap laserdisc control software for PC? (15) 4. Bibliography software (12) 5. Toolbook (9) 6. Cable TV on Campus (7) 7. Non-Systems ID Approaches (7) 8. QuickTime (7) 9. Distance ed (6) 10. Literature Programs (6)	11. Software to format documents (6) 12. Statistic package (6) 13. Another lurker comes in from the cold (5) 14. Kodak CD-ROM (5) 15. MMEDIA-L Address (5) 16. Technology plans solicited (5) 17. A new LCD panel (4) 18. APPLE IIGS Network (4) 19. How are Notebook Computers Used? (4)
EDTECH -- Topics with 2 or 3 messages that began in November 1992	
1. Hypercard on IBM (3) 2. Listserv List (3) 3. Steve Ehrman's address (3) 4. Video on use/application of overhead projector (3) 5. Videodisc and the PC (3) 6. Assistance in e-mail privacy research (from CMC) (2) 7. Clipart wanted for biology (2) 8. NAPLPS (2)	9. Macintosh System and Finder (2) 10. Myers-Briggs personality assessment (2) 11. Quickie Scanner (2) 12. Teacher Introductions list (2) 13. Technical Review, K - 12 (2) 14. Telephone Bridge (2) 15. The Macintosh Desktop Metaphor (2) 16. University Copyright Policy (2) 17. VITA Distribution Service (2)

Figure 6.4 - Topics with 2, 3 and 4 or More Messages, 1992

EDTECH - Single (no response) Topics That began in November 1992	
1. ***FTP to Apple Computer** 2. .zip files 3. accessing ERIC on the Internet 4. ANNENBERG ANNOUNCES: (fwd) 5. ARACHNET - Journal of Virtual Culture 6. Bibliography of Introductory Readings for Network Novice (fwd) 7. Call for Papters 8. CALL FOR PAPERS & CALL FOR GUEST EDITORS- S&G 9. Call for reviewers (from LM_NET) 10. CancerNet info (fwd) 11. Democracy 12. ENTOMO-L (fwd) 13. ERIC DIGEST (from NETTRAIN) (fwd) 14. ERIC DIGEST (from NETTRAIN) (fwd) 15. Expansion on Mac Classic II 16. Full-motion video boards 17. Full-text ERIC Digests - now available for IBM PCs (from LM-NET) 18. Hypercard and Student Assistants 19. Information request: grad programs 20. Internet Users' Glossary 21. IVD software 22. JEMH & MM Review souces 23. Leading Edge UserGroup Info Sought 24. List Change: New Home for IPENet 25. Mac Backup and other Mac Topics 26. Multimedia Chem Labs 27. Need help on OzTex 28. NetPower Snapshot # 4 new (fwd) 29. Networked Based CBT 30. NET IPENet (from DEVEL-L) 31. Net List: Adv-Eli Latest Advances on Electric Engineering (fwd) 32. New List: Adv-Info Latest Computing Advances Net List: 33. AFRICANA Information Technology and Africa 34. NET LIST: e-jrnl for a/v librarianship 35. NET LIST: Ednet (from NET-LIST) 36. NET LIST: PCORPS-L Peace Corps Discussion List (from NET-LIST)	37. New Ph.D. Program 38. New York Network Connections 39. NeXT CDROM Software Sampler (fwd) 40. November Hunt (from NETTRAIN) 41. November Hunt Results - 1 of 4 42. November Hunt Results - 2 of 4 43. November Hunt Results - 3 of 4 44. November Hunt Results - 4 of 4 45. O-Reilly (from HELP-NET) 46. Please elaborate about VERONICA 47. Pointing device 48. POPMail PC Version 3.0 now available 49. Position Announcement, University of Houston 50. PSI/CBT?CAI on the topic Internet 51. QuarkXpress 52. Query - Are Intro to CS courses still worthwhile? 53. Recent Uploads to Libsoft (2/11/92) 54. Recent Uploads to Libsoft (11/11/92) 55. Recent Uploads to Libsoft (24/11/92) 56. Request for Information 57. Review of Krol, "The Whole Internet" 58. Review of LaQuey, "The Internet Companion" (from NETTRAIN) 59. Reviews of courseware 60. Sony DIH-2100? 61. SPECIAL INTERNET CONNECTIONS 62. Speech Synthesis unit 63. Technology and persons with Disabilities Conference (from KIDSNET) 64. Telecommuting Survey (from PACS-L) 65. Tenure Track IT Position Available 66. The American Women's Trans-Antarctic Expedition (AWE) 67. The Commonwealth of Learning 68. The scope of educational technology 69. To LOGO teachers 70. Updated Internet Services List (fwd) 71. URBNET Help Needed 72. Veronica: an Archie for Gopher (from HELP-NET)

Figure 6.5 - Topics with a Single Message, 1992

EDTECH – Topics with 4 or more messages that began in November 1995

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. MAC versus PC/Windows Platforms (30) 2. Should schools declare a platform (27) 3. Desktop protection for Windows (13) 4. Is 19.2 Kbps Fastest Speed? (12) 5. Image-Writer with Mac (11) 6. Techn. Requirement for teaching credential? (11) 7. Urgent- Virus problem- B Tree Leaf?? (11) 8. Shareware Screen Capture Program for Windows (11) 9. Help finding grade program (11) 10. School Web Pages (10) 11. Need Help with PhoneNets (10) 12. Alphasmart Keyboards (10) 13. What is the best typing skill tutorial? (9) 14. On Site Technology Staff? (9) 15. Web Servers (9) 16. Internet contracts (9) 17. Throughput on standard phone line (8) 18. Home Page for our College (8) 19. Video Editing (7) 20. Wanted: HyperStudio Guide (7) 21. ClarisWorks (Mac) 4.0v2 updater (7) 22. Norton Utilities or MacTools? (7) 23. Windows NT Listserv (7) 24. Static electricity and keyboard freeze (7) 25. Computer to TV Adapter (7) 26. Automatic shut down problem (6) 27. Are Fiber Optics Necessary to Meet Future Needs? (6) 28. Backups of Microsoft diskettes (6) 29. Clarisworks printing (6) 30. Windows 95 security (6) 31. Network Security (6) 32. More on AT&T Internet (6) | <ol style="list-style-type: none"> 33. Latest Eudora for Windows? (6) 34. Power mac 5200/75 (6) 35. Guide for HyperStudio (6) 36. Alternative Input Devices (5) 37. ESL Software (5) 38. MAC versus PC/Windows Platforms 39. Macintosh 520c or 540c? (5) 40. Macs with PC capability (5) 41. PCI bus (5) 42. Postscript files (5) 43. Problems with PowerMac 7200? (5) 44. Technology Curriculum (5) 45. Apple IIe Computers (4) 46. Are Acceptable use Policies Really Necessary (4) 47. Automatic Turn-On with Mac Eudora & PPP (4) 48. Computer Lab Furniture (4) 49. Connecting to the Internet (4) 50. Easy E-Mail Projects (4) 51. Endnote Plus Info (4) 52. Garbage gif images (4) 53. Help uploading using Claris Works (4) 54. HELP! Cross-platform question (4) 55. Interference on screen (4) 56. Keyboarding devices (4) 57. Listservs for Novell (4) 58. MAC LC630+486 (4) 59. Mac networks & CD-Towers (4) 60. MAC/Internet/phones etc (4) 61. Middle School CAD Program (4) 62. NASA program (4) 63. Netscape for Windows 95 (4) 64. Unpartitioning pc hd (4) 65. Wireless/remote mice and teaching (fwd) (4) |
|---|---|

Figure 6.6 - Topics with 4 or More Messages, November 1995

EDTECH -- Topics with 2 or 3 messages that began in November 1995

1. Cache Size? (3)	42. Computer systems upgrades in schools (2)
2. Computer Carts (3)	43. Critical Thinking and Technology (2)
3. Computers with math curriculum (3)	44. First Class BBS (2)
4. Contaminated chooser (3)	45. Help w/PC & Wiring School for Internet (2)
5. Distance Education for Students with Disabilities (3)	46. Install problems - MS Works (2)
6. DOS on the Net? (3)	47. Interactive CD Technology (2)
7. Fiber to the Classroom (3)	48. Junk in Recovered Files (2)
8. Growing System file (3)	49. Lantastic Listserv? (2)
9. High School Astronomy Course (3)	50. LC 5200 Problems w/Print Shop (2)
10. High School Home Page (3)	51. LC5200 (2)
11. Iifx Hard Drive Source (3)	52. LEGO/Logo (2)
12. Internet Access PPP (3)	53. Looking for Listserv or Newsgroup (2)
13. Internet at lower-grade secondary schools (3)	54. LOW Tech and What do I do with it? (2)
14. Internet Hookup outside USA (Chile) (3)	55. Mac AV to TV Question (2)
15. Looking for Library Internet Access (3)	56. Mac multimedia suggestions (fwd) (2)
16. Mac Boot Problem (3)	57. Math curriculum in computer lab (2)
17. Mac Questions (3)	58. Mathematics Software Help (2)
18. Merging Two Databases (3)	59. Me Two, ResEdit, ARA (2)
19. Multimedia Course Information (3)	60. Netiquette (2)
20. Need help w/Global Village (3)	61. Netscape 2.0 for Mac problems (2)
21. Networked Quadra660AV freezing-help (3)	62. Netscape error (2)
22. New Iomega JAZ Drive (3)	63. Online Credit Courses (2)
23. Printer Problems ... (3)	64. Oracle agrees with me about low tech! (2)
24. Scientific Problem Solving (3)	65. Out Based EducationCurriculum? (2)
25. Scope and Sequence of Technology Curriculums (3)	66. PC Graphing Package? (2)
26. SQL Server for PowerMac (3)	67. PC's, MAC's & CD Tower (2)
27. Technology Plans (3)	68. Procedures for Delivering A/V Equipment to Classrooms (2)
28. TOWS-A literary Magazine for 4 th -6 th Graders (3)	69. Public Access Television Policy (2)
29. Using powerbooks in the Lab (3)	70. Internet access (2)
30. Wanted: Strategies for using technology to teach K6 (3)	71. Reading EdCen News with NewsWatcher?? (2)
31. Windows HTML Editors (3)	72. Rick Steenblick (2)
32. 14.4k modems (2)	73. Science telecourses or interactive technology utilization (2)
33. ASL Font? (2)	74. Seeking K-6 Science Curriculums (2)
34. AT&T Plans School-Internet Link (2)	75. Seeking Spanish language penpals (2)
35. Automation Software for Small Research Libraries (2)	76. Slick network cable and downtime (2)
36. Batteries (2)	77. Student use of internet?? (2)
37. Call for Presentations - Technology in the 21 st Century (2)	78. Teaching PowerPoint/2 hrs. (2)
38. Chameleon Sticking Its Tongue Out (2)	79. Technology Attitude Surveys (2)
39. Chancery Software or CNS info? (2)	80. The art of www mirroring (2)
40. Change Mac MenuBar (2)	81. The TI-92 calculator (2)
41. Computer Classes Sought (2)	82. Translation Software (2)
	83. Web Page Creation Curriculum, high school (2)
	84. What Are These Lines: Windows .3.11 Experts (2)
	85. Which UPS(2)

Figure 6.7 - Topics with 2 or 3 Messages, November 1995

**EDTECH - Single (no response) Topics
That began in November 1995**

1. ***NEW Net-happenings address***	43. LC III Freeze with ethernet
2. 1,500 School Web Sites on Web66	44. List of NSF Projects to Further Disability Involvement
3. 11X17 Printers under \$1000-help	45. Looking for a copy of Netscape 2.0b1
4. 24 Hours in Cyberspace>Feb.8	46. Looking for VCR software
5. 3D Lighting Design:	47. Mac Powerbook 5300cs/100
6. Any bibliography manager better than Endnote?	48. Mac problems-please help!
7. Any helpful musical/computer techheads out there?	49. MAC use of MS Mail on a novell server
8. Apple Portrait on 6200CD?	50. Macro viruses
9. Apple Work Group Server 80 Sad Mac Codes	51. Manipulating Printers in Windows
10. Attention Teachers of English	52. Math & Sci Reform-FREE Satellite TV
11. Automatic dialing by PPP	53. Microsoft Works Install Work-Around
12. Caching proxy servers???	54. Monitors
13. CAI/CBI/CBA Practice in Elementary Special Ed	55. NASA's Online from Jupiter Project
14. Calcomp High Speed Plotter	56. Need K-8 English language program
15. Claris Web Site	57. Netscape Lan/Wan access
16. ClarisImpact-grad in the weeds...Help please	58. New mailing list about Acceptable Use Policies!
17. Class Inclusion	59. New Mich. Dept of Education WWW Pages
18. Classroom Connect Infobot revised...	60. New Web Page for NSBA's ITTE
19. Comp/Internet Club Mailing List	61. Newsgroup for Administration
20. Conference: New Media Expo/Jan30-31	62. Nutrition is Science Course
21. Developing an AOL Educational Guide	63. Onsite Technology Staff?
22. Dr. Suess CD ROM	64. PBS High Stakes in Cyberspace
23. Earthquake preparedness	65. Plan to Attend LETT'96
24. Education Help with Tech. For People with Disabilities	66. Plato
25. Entry Assessment Test	67. Position: Assistant Professor of Instructional Technology
26. Eudora Dial Up	68. Position: Assistant Professor, Instructional Design & Technology
27. Geographic Information Systems Users	69. Position: AV Manager at MIT
28. Getting on in Chile	70. Position: Coordinator of Inst. Technology-U. of N. Carolina
29. Grad Ed. Tech. Programs at New Mexico State	71. Position: Educational Technology Specialist-Michigan
30. Graduate School: English/Multimedia	72. Position: Instructional Designer-PSU
31. How to Use Majordomo or Other List Software?	73. Position: Instructional Multimedia Producer-PSU
32. Hypermedia for adults-recommendations	74. Position: Technology Coordinator
33. I need feedback about automated test scoring systems	75. Positions: Faculty, Learning Sciences, Northwestern University
34. Info on HP-5L printer requested	76. Positions: Instructional Technology Faculty -- Texas
35. Innovations I Connectivity Exposition	77. PPP Server
36. Installing new hard drive	78. Professional Development
37. Internet Access Mac 8500	79. Public Access vs. Local Origination
38. Internet E-mail Project	80. RamDoubler Problems
39. Introduction: Amber Culbertson	81. Recommendations for Multimedia Lab
40. Iomega tech support	82. Recycling old Computers
41. K12 School Servers - Use Policies Requested	
42. Language Acquisition and Tech	

EDTECH - Single (no response) Topics That began in November 1995 (continued)	
83. Request for Distance Learning Info.	92. Teaching About Space Travel?
84. Request for Greetings	93. File and Printer Sharing Systems*
85. Request for Greetings: Health Care Informatics Course	94. Tech. In school-Wall Street Journal
86. Request for Surveys on Academic Computer Needs	95. Technical positions?
87. Scanner and Video Conferencing	96. Technologies for School/Home Connection
88. Sitcomm	97. Technology Coord. Job description/ qualifications
89. Site-Based Education WWW (fwd)	98. The EVERY student laptop
90. Some EDTECH Mail Lost -- Please Resend	99. Where to get books on the net?
91. Teacher Resources (forward)	100. Wonderful Educational Web Site
	101. WWW>AERA Web Site Address

Figure 6.8 - Topics with a Single Message, November 1995

Topics

There are literally thousands of ways the content of a list could be divided up – content specific or general. It is very difficult to make comparisons of different times when presented with the raw data showing just the subjects of the postings. For purposes of this study, list content was studied in two basic but potentially important ways. First, a highly content specific approach was used - assigning messages to topic categories that were appropriate to the general theme of the list (plus one miscellaneous category). This system of classification would undoubtedly be different for a list where different subject matter was discussed. Second, the primary purpose of the message in terms of whether it initiated a discussion, responded to an already initiated topic, or

broadcast a message without the intent to start a discussion, was quantified for the messages in each category of the samples.

For general purposes of classification, the following topics will be used:

- Application Software
- Curriculum design, classroom strategy and activities
- Internet software, sites & resources
- Research, positions, schools & professional development
- Policy and philosophy
- Operating systems
- Hardware
- LANS, Servers & Internet connections
- Administrative & miscellaneous

Summary of EDTECH Content, November 1992					
Category	Total	%	Initial	Response	Broadcast
Application Software	58	21.3%	13	45	0
Curriculum	11	4.0%	4	7	0
Internet software, sites & resources	22	8.1%	6	14	2
Research, positions, schools & professional development	18	6.6%	4	10	4
Policy and philosophy	46	16.9%	4	42	0
Operating Systems	33	12.1%	4	26	3
Hardware	35	12.9%	10	25	0
LANS, Servers & Internet connections	5	1.8%	3	2	0
Net-Happenings Postings	38	14.0%	0	0	38
Admin. & Misc.	6	2.2%	2	4	0
Total	272	100.0%	51	174	47

Figure 6.9 - Summary of EDTECH Content, November 1992

Figure 6.9 summarizes the frequency with which various categories of postings were discussed in November 1992. Since the 38 Net-Happenings broadcast postings influenced various other percentage measurements rather substantially, it was decided to remove them to make a better comparison. The 38 postings consisted of one (3%) about application software, 21 (55%) about Internet software, sites and resources, ten (26%) about research and conferences

and six (15%) about curriculum and teaching related subjects. It is interesting to note the activities of gathering groups of information on the Internet and broadcasting their availability was already strongly underway in 1992, an activity that would shortly be extended greatly by the advent of the WWW.

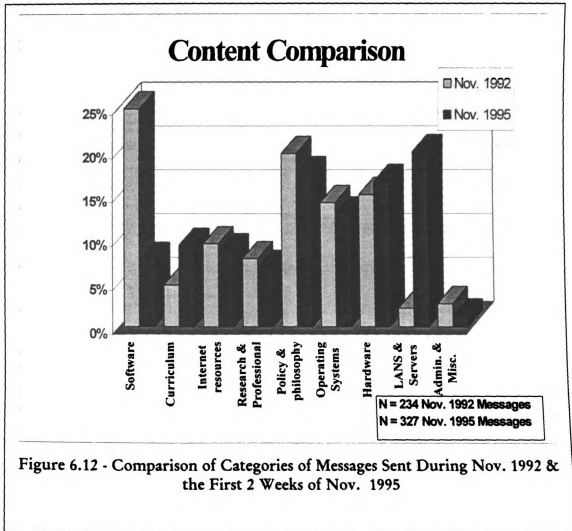
EDTECH Content, November 1992 -- Outlier Not Used					
Category	Total	%	Initial	Response	Broadcast
Application Software	58	24.8%	13	45	0
Curriculum	11	4.7%	4	7	0
Internet software, sites & resources	22	9.4%	6	14	2
Research, positions, schools & professional development	18	7.7%	4	10	4
Policy and philosophy	46	19.7%	4	42	0
Operating Systems	33	14.1%	4	26	3
Hardware	35	15.0%	10	25	0
LANs, Servers & Internet connections	5	2.1%	3	2	0
Admin. & Misc.	6	2.6%	2	4	0
Total	234	100.0%	51	174	9

Figure 6.10 - Summary of November 1992 Content (outlier removed)

EDTECH Content, November 1995 - First 14 Days					
Category	Total	%	Initial	Response	Broadcast
Application software	25	7.6%	10	15	0
Curriculum	30	9.2%	14	13	3
Internet software, sites & resources	28	8.6%	5	18	5
Research, positions, schools & professional Development	22	6.7%	7	9	6
Policy & philosophy	57	17.4%	5	52	0
Operating Systems	42	12.8%	10	32	0
Hardware	54	16.5%	15	39	0
LANs, Servers & Internet connections	65	19.9%	17	74	0
Admin. & Misc.	4	1.2%	2	0	2
Total	327		85	226	16

Figure 6.11 - Summary of November 1995 Content (first 14 days)

Only the first 14 days of November 1995 EDTECH were considered here, since these represented a number of messages roughly equivalent to the whole of November 1992. It was felt that samples of about 300 messages should be sufficient to indicate any major contrasts between the two months and perhaps give a more accurate comparison than two samples more disparate in size might. Figure 6.12 shows these comparisons in chart format to make the contrasts easier to detect.



Though Figure 6.12 gives a good general indication of the comparative differences between the different categories of topic, it does not show what was actually talked about on the list. A more detailed definition and breakdown of the contents of each category, which will go in more depth about what was actually being said and how that changed, follows.

Application Software

Application Software Summary			
	# of Postings	% of sample	Inquiry/Response Ratio
Nov. 1992	58	25.2 %	13/45
Nov. 1995	25	7.6 %	10/15

Figure 6.13 - Application Software Summary

This category encompasses discussion of various application software packages, excluding Internet related and operating system software. It includes questions about names of software, how to find particular packages and requests for more information on specific software. It also contains discussions on how to use different types of software and questions regarding what to do about various problems using software packages. This particular category of messages exists since one of the major functions of EDTECH is to serve as a network for finding out what to do about a wide variety of problems that educators might encounter obtaining and using software applications in educational settings. These messages discuss the sorts of problems and questions that educators might have when working with specific applications. The category does not include methods of teaching these applications or consider their impact on curriculum, but instead to reflect the extent to which educators seek help or information on the applications they might be using themselves.

Operating systems were excluded from this category, as it was felt that, though related, the operating system itself and the problems encountered with

regard to using it requires a different level of understanding and expertise in many ways than that required by someone who is attempting to use specific software. Some questions related to the operating system are in fact close to application software questions, but a distinction was attempted. As well, some Internet-related application questions were placed in the Internet resources section, rather than in this application software section. This was done in order to attempt to create a category that would provide insight into the problems and needs of educators with respect to using the Internet in educational settings. It was felt that the applications and the Internet resources that could be accessed by using them belonged in a separate group from applications that can be used with no Internet access.

Application Software: 1992

Of the 58 messages related to application software posted in November 1992, 56 (97%) were inquiries and responses about where to locate a software package, questions about what software package to use for a certain purpose, and requests for more information about specific programs. Two posters (3%) discussed how to do a specific task or solve a problem using a software package.

Overall there were 13 inquiries (22%) and 45 responses (78%) with no broadcast messages after the outlier was removed. The more frequently discussed types of applications (by percentage of the total) included:

- research oriented (bibliographic, statistical and formatting) (38%)
- laserdisk control software (22%)
- hypertext (Linkway, Hypercard and Toolbook) (16%)
- video applications (Quicktime) (12%)
- clipart (3%)

Application Software: 1995

Of the 25 application software messages in the November 1995 sample, 18 (72%) were general questions and responses about where to locate a specific software package, what software to use for a specific function or requests for more information about given software. 7 (28%) requested help with a problem using software or advice on how to perform a specific task. There were 10 inquiries (40%), 15 responses (60%) and no broadcast messages. The types of software discussed included

- research oriented (bibliographic) (16%)
- graphing (24%)
- translation (8%)
- merging databases (12%)
- Printshop problems (8%)

The longest conversation in this group was a request for a recommendation for a graphing package that the curriculum director of a school wanted, with a number of suggestions in reply.

Application Software: comparison and discussion

Though the WWW was just being invented and so was not reflected in the November 1992 postings, it's interesting to note that a number of messages refer to hypertexting software and Quicktime, technology uses that were soon to have a wider audience in the WWW. Most conversations are of the form "I would like software that does "X". Does anyone know the name of it or where I can locate it?" In both months, this category was mainly used for product referrals, reviews and recommendations. It was similar in some ways to an interactive journal or magazine dedicated to helping make purchasing decisions and educate about available software resources.

Curriculum

Curriculum Summary			
	# of Postings	% of sample	Inquiry/Response/Broadcast Ratio
Nov. 1992	11	4.3%	4/7/0
Nov. 1995	30	9.2%	14/13/3

Figure 6.14 - Summary of Curriculum Messages

Curriculum: 1992.

In November 1992 there were 11 messages related to the broad category of curriculum. These included 4 (36%) inquiries, 7 (67%) responses and no broadcast messages. The types of topics discussed included:

- Teaching online and distance education (27%)
- Lesson plans, projects & teaching units (9%)
- Administrative software & ideas (9%)
- Where to find teaching resources like videos, texts, etc. (27%)
- Raising student IQ's (27%)

Specific topics that were discussed included techniques for delivering satellite distance education courses, where to locate videos on how to use overhead projectors and discussion of a report that Japan had raised its national IQ by 15 points since 1950.

Curriculum: 1995

There were 30 messages related to curriculum in the first 2 weeks of November 1995. Of these 14 (47%) were inquiries, 13 (43%) were responses and two (7%) were broadcast messages.

The curriculum issues discussed included:

- Teaching online (7%)
- Lesson plans, projects and strategies (33%)

- Technology curriculums (30%)
- Keypals (13%)
- Teaching problem solving (10%)
- Testing (3%)
- Lego/logo (3%)

The specific topics considered in some of the longer threads include a request by someone for input on what a technology curriculum for K-12 should include and several responses giving experiences and feedback. There were also many messages related to lesson plans needed or projects begun.

Curriculum: comparison & discussion

By percentage, there were twice the postings in this category in 1995 as there were in 1992. There appears to be a decided shift in emphasis and interest between the two years. In 1992 most discussions revolved around teaching online, distance education and where to find teaching resources like videos. By 1995, participants put much⁴ more emphasis on specific lesson plans and designing technology curriculums. This may reflect the growing feeling in school districts that teachers should be using technology in their classes and mandates by government that plans be in place to assure that technology is appropriately taught.

Internet-related Software and Resources

Internet-related Software & Resources Summary			
	# of Postings	% of sample	Inquiry/Response/Broadcast Ratio
Nov. 1992	22	8.1 %	6/14/2
Nov. 1995	28	8.6 %	5/18/5

Figure 6.15 - Summary of Internet-related Messages

This category includes messages related to client software used to access information on the Internet, such as e-mail packages, WWW browsers, FTP software and other similar applications. It also includes messages that contain questions or information about resources that can be found on the Internet, including WWW sites, e-mail lists, files and other resources. It does not cover servers, as it was thought that most server questions would be of a different nature than questions about information on the Internet and how to access it. In general, if an Internet site or resource was given as a specific response to a question that itself was in a different category, that response was placed in the same category as the initial question. So messages in this category would be those that address the Internet program or resource primarily, and not simply as a response related to a discussion on some other topic.

Internet-related: 1992

In November 1992 there were 20 Internet-related messages including seven inquiries (35%), 13 responses (65%) and 2 broadcast messages (10%).

These included the following topics:

- Files and resources in the Internet (not including WWW sites) (35%)
- E-mail lists and e-mail journals (60%)
- Client software, downloading and compression (5%)

This category did not tend to generate discussion or debate. The longer specific conversations were held on how to get a list of all the listservs that exist, what address the Mmedia-L list has, and where to find files that contain teacher introductions. They consisted of a brief question and several people supplying the requested information.

Internet-related: 1995

In the November 1995 sample there were 28 Internet-related messages, including 5 inquiries (18%), 18 responses (64%) and 5 broadcast messages (18%). 20 (71%) requested information or location of resources, 8 (29%) discussed how to use a product or resource or worked on troubleshooting a problem with it.

These messages included discussion of:

- Specific WWW sites (50%)
- WWW browsers (18%)
- HTML or WWW page editors (14%)
- Internet client software other than WWW (14%)
- Resources other than WWW sites on the Internet (4%)

The longest discussion was from a school that was beginning to design its WWW pages asking people to tell it about some excellent school pages to view to get ideas. Seven people posted recommendations of good school WWW pages or reference sites.

Internet-related: comparison and discussion

It is obvious that there would not have been much mention of the WWW in November of 1992, as it was just being invented. Still, it is interesting to see how discussions of various aspects of the WWW essentially appear to have superceded discussion of other issues relating to the Internet by 1995. Not only does discussion of WWW related issues appear on EDTECH in 1995, but discussion of other matters drops to less than 20% of the traffic in this category. It is probable that most of the resources that were previously found elsewhere have begun to move to the WWW by 1995. The substantial decrease in discussion about e-mail lists and journals by 1995 reflect the fact that an increasing number of people were finding some of the benefits of e-mail lists available in other formats on the WWW. It is also likely that they had begun locating groups they did need via WWW search sites rather than by posting messages on lists like EDTECH. This may indicate that not only was there interest in the WWW, but its availability supplanted most discussions by educators on other aspects of the Internet.

Research and Professional Development

Research and Professional Development Summary			
	# of Postings	% of sample	Inquiry/Response/Broadcast Ratio
Nov. 1992	18	6.6 %	4/10/4
Nov. 1995	22	6.7%	7/9/6

Figure 6.16 - Summary of Research and Professional Development

The research and professional development category is for messages related to more academic work in the area of educational technology. Though a good proportion of EDTECH traffic deals with trouble shooting practical problems, one of the main original intents for the list was that it also be a place for graduate students to find others to collaborate with, and for researchers to share their work. This category includes postings related to positions—either position announcements or discussions of position descriptions and consideration of technical staff jobs. In it as well are calls for papers and requests for collaboration on research projects. Since for most educators, professional development is an integral part of their work, requests for information about various graduate programs and professional development opportunities are included in this area too.

Research and Professional Development: 1992

In November of 1992 there were 18 messages in the Research and Professional Development category. Four (22%) were inquiries, 10 (56%)

responded to inquiries and four (22%) were broadcast announcements not intended to generate a discussion. The main categories discussed included:

- Positions--offered, discussed or described (11%)
- Conference announcements and Calls for Papers (6%)
- Research papers and books--requests for help on or references (67%)
- Credentials and degrees--Ph.D.'s, Masters & professional development (17%)
- Technical staff and staffing (0%)

One of the longer discussions was about a request for sources that would be helpful in an instructional design paper that used non-systems approaches. Many of the inquiries asked for clarification, but others offered references in the area. A second more serious discussion related to a request that others help define issues to be examined in a transcript of distance education course discussions. Most of the other threads in this area were short inquiries or broadcast messages.

Research and Professional Development: 1995

In the first two weeks of November 1995 there were 22 messages in the Research and Professional Development category posted to EDTECH. Of these seven (32%) were inquiries, nine (41%) were responses and six (27%) were

broadcast messages not intended to generate a discussion. The main subject areas discussed included the following:

- Positions--offered, discussed or described (41%)
- Research papers and books (18%)
- Credentials and degrees--Ph.D.'s, Masters & professional development (27%)
- Technical staff and staffing (14%)

The longest discussion in this time frame was around a request for opinions on what technology courses should be required to get a teaching credential and what technology skills would be best for teachers to have. There was also a thread on what technology staff would be most appropriate for a school district to have. In the sample period in November 1995, there were many position announcements and other broadcasts, and few additional discussions in the research and professional development area.

Research and Professional Development: comparison and discussion

By percentage, the Research and Professional Development categories in 1992 and 1995 were remarkable similar as to volume, differing only by one-tenth of a percent. The topics discussed were different between the two months though. In 1992 two-thirds of the messages dealt with writing and research. By 1995 the emphasis was much more strongly on positions and credentials. This

may reflect trends in society during the time frame of the study, or it may be attributable to other factors, such as additional e-mail lists and resources available for those who want information or collaborators on research they are conducting.

Policy and Philosophy

Policy and Philosophy Summary			
	# of Postings	% of sample	Inquiry/Response/Broadcast Ratio
Nov. 1992	46	16.9 %	4/42/0
Nov. 1995	57	17.4 %	5/52/0

Figure 6.17 - Summary of Policy and Philosophy

Policy and philosophy is a category for some of EDTECH's more lengthy debates. It is an area for bringing up planning techniques, definitions, general technology policy, and debates about the nature and potential best ways to use technology in education overall.

Policy and Philosophy: 1992

In November of 1992 there were 46 messages in the Policy and Philosophy category. Of these, four (9%) were inquiries and 42 (91%) were responses to the messages of others.

- Technology plans and mission statements (17%)
- Education and virtual reality (48%)
- Copyright policy (4%)

- Multimedia definitions (17%)
- How are notebook computers used practically? (7%)
- Are Introduction to Computing courses worthwhile? (2%)
- Misc. (4%)

The longest discussion in November 1992 was on the possible uses and benefits of virtual reality in education. Though it accounted for nearly half of the messages in November, the discussion actually began in October. This was a thoughtful and wide-ranging discussion about the medium of virtual reality itself, and what how its development may affect teachers and students in the future. The multimedia definitions discussion was related, in that it discussed not only virtual reality, but multimedia in general and its potential impact on teaching.

Policy and Philosophy: 1995

There were 57 EDTECH messages on policies or philosophies relating to educational technology during the first two weeks of November 1995. Of these, five (9%) were inquiries and 52 (91%) were responses and discussion about a topic someone had already started. The main topics the messages dealt with are summarized below.

- Acceptable Use Policies (5%)
- Mission statements, technology plans and needs assessments (9%)

- High tech vs. low tech. (32%)
- Should schools declare a platform? (35%)
- Is one computer on the Internet better than none? (18%)
- Should every student have a laptop? (2%)
- Should CAI be instituted in all schools? (2%)

Though one of the longest discussions in November 1995, the "high tech. vs. low tech." thread actually started in October. In total it was comprised of 31 messages by 19 different individuals. This is a recurring thread in EDTECH from the earliest days of the list, and tends to draw out opposing views about what the optimum use of technology, especially more sophisticated technology is in education. The "Should Schools Declare a Platform" thread shifted to a MAC's vs PC's debate, from the more useful initial question about whether it is appropriate for a school district to declare a platform that might inhibit teachers and parents from exploring additional types of computers that could be of benefit to them. Since the two platforms being considered were MAC's and PC's, most of the traffic was more about the differing advantages of each, than about the overall issue. But it did spark a lively discussion.

The issue in the "Is one computer on the Internet better than none?" will be relevant to teachers who do not have excellent Internet access for their

students. For the most part, the educators on the list felt that significant projects can be done, even with just a single Internet connection.

Policy and Philosophy: comparison and discussion

The policy and philosophy category was consistent as to percentage of list activity over the two sample periods, varying by less than two percent overall. Inquiry/response ratios were also similarly consistent, supporting the idea that participants tend to engage in discussions in a similar manner over time on EDTECH. Of course, topics varied, with a MAC vs. PC debate taking up a lot of the discussion in 1995. Each period showed two or three major discussions and several minor ones around the issues involved.

Operating Systems

Operating Systems Summary			
	# of Postings	% of sample	Inquiry/Response/Broadcast Ratio
Nov. 1992	33	12.1 %	4/26/3
Nov. 1995	42	12.8%	10/32/0

Figure 6.18 - Summary of Operating Systems Messages

This category deals with questions and comments associated with the use of various operating systems. It does not cover political or philosophic debates on which operating system is preferable, but instead concentrates on issues involving problems of use. It also includes items like RAM extension software, security and file formats. Operating system messages tend to drift from topic to

topic within the same subject header and/or discuss multiple topics. They are almost entirely problem solving/how-to discussions, rather than informational messages.

Operating Systems: 1992.

Of the 35 operating system messages in October 1992, 4 (11%) were inquiries, 27 (77%) were responses and 4 (11%) were broadcast messages. The main topic categories were:

- Backup techniques and problems—14 (40%)
- MAC operating system—7 (20%)
- File associations, compression and conversion—7 (20%)
- Protocols—5 (14%)
- Drivers—2 (6%)

The longest discussion was on DOS Backup, though it drifted through a few other topics. The initial inquiry mentioned that previously the DOS Backup command was not considered reliable. It asked for input on current opinion on using this program and problems with using it. Though there were 13 messages overall in this thread, only four apparently deal with the initial topic. Eight discuss MAC backup and one formatting disks. There is at least one follow-up under a different subject heading. Responses to the question

itself generally recommend using a different method than DOS backup. The majority of the messages deal with MAC's or methods of backing up MAC's.

The MAC operating system thread consisted of several broadcast mini-essays on how to use a MAC by a subscriber, and a number of corrections to the instructions by others. This exchange provoked a fair amount of off-list discussion about whether EDTECH should carry sets of instructions, particularly if they weren't accurate.

The only informational thread was one which asked for a definition of the NALPS protocol, but even that had overtones of problem solving, as the question was looking for techniques of using it.

Operating Systems: 1995.

The 42 operating system messages in the November 1995 sample. Of these, 10 (24%) were inquiries and 32 (76%) were responses to a previous message. They fell into the following categories:

- MAC operating system questions – 9 (21%)
- RAM extension software – 9 (21%)
- Fonts – 2 (5%)
- Desktop Security – 14 (33%)
- DOS/Windows – 4 (10%)
- File formats, compression, associations and conversions – 4 (10%)

Though several topics only lasted for one or two messages, longer discussions were held on the topics listed below. The longest discussions were on RAM extension software and Windows desktop control programs.

- MAC Classics whose system files seem to increase in size by themselves.
- Problems with running Ram Doubler in a MAC LC 5200 lab. The subscriber asked if anyone else was having the same problem. Various people said they were or weren't and offered suggestions for fixing the problem.
- A request for the name of a program to keep students from moving icons or deleting programs in Windows (it evolved to people explaining what the internal Windows settings that would restrict access are).
- A related topic about Windows 3.1 that was discussed on the list, was how to keep students out of the Windows Program manager.
- Someone asked directions on how to fix a graphics image that wouldn't load properly in Netscape.
- There was a brief discussion on methods of removing a partition on a hard drive.

Operating Systems: Comparison and Discussion.

Concern with operating system questions remained remarkably consistent between the two sample periods, varying less than one percent in

proportion of the total sample. The inquiry-broadcast vs. response ratios were also quite similar showing at most a 2% difference overall. This may reflect a consistent level of concern across participants, time and even hardware platform, with managing issues related to the operating and file system being used on computers in education.

With specific topics, while concern with issues directly related to the Macintosh operating system remained consistent at about 20% across the two years, most other topics discussed were so different that different categories had to be used. It is, however, possible that desktop security and backup reflect the same kinds of concerns, and so do show a stable trend in the discussion over the two years.

Hardware

Hardware Summary			
	# of Postings	% of sample	Inquiry/Response/Broadcast Ratio
Nov. 1992	35	12.9 %	10/25/0
Nov. 1995	54	16.5%	15/39/0

Figure 6.19 - Summary of Hardware Messages

This category is for discussions about hardware. Hardware includes any of the technical items that educators may purchase or use. The category is specifically for issues directly related to purchase, installation or use of

computers, printers, computer peripherals and cards, video, cable, satellite and other related equipment.

Hardware: 1992.

Of 35 total messages in November 1992, 10 (29%) were inquiries and 25 (71%) were responses to topics generated by others. The messages fell into the following main categories. There are more categories for this topic than for some others because of the diverse nature of concerns about hardware.

- Printers—0 (0%)
- Mac Computers – 1 (3%)
- Other Equipment (risograph, speech synthesizers, scanners, telephones) – 10 (29%)
- TV, Cable TV, Video, Satellite – 7 (20%)
- IBM Compatible computers – 1 (3%)
- Input devices, keyboards, pointing devices, touch screens – 2 (6%)
- Video cards, video capture boards, monitors, projection units – 7 (20%)
- Drives & drive adapters (CD, floppy, jaz, tape, video disk, laser disk) – 7 (20%)
- Hardware purchasing for labs – 0 (0%)

Some longer conversations included discussions of the advantages of using risographs, how cable TV is used on college campuses, questions about LCD panels and videodisk control mechanisms for PC's.

Hardware: 1995

Of the 54 messages on hardware in the November 1995 sample, 15 (28%) initiated a discussion and 39 (72%) responded to someone else's inquiry.

- Printers—4 (7%)
- MAC Computers – 20 (37%)
- Other Equipment – 3 (6%)
- TV, Cable TV, Video, Satellite – 0 (0%)
- IBM Compatible computers – 1 (2%)
- Input devices, keyboards, pointing devices, touch screens – 9 (17%)
- Video cards, video capture boards, monitors, projection units – 11 (20%)
- Drives & drive adapters (CD, floppy, jaz, tape, video disk, laser disk) – 4 (7%)
- Hardware purchasing for labs – 2 (4%)

Some longer specific conversations included:

- Where to get an adapter to send computer screens to a TV monitor.
- What to do when MAC's automatically shut down while students are working on them.

- Which of two MAC's to purchase.
- Where to find alternative input devices for special needs students.
- How to fix a MAC that won't boot.
- Cleaning keyboards.
- Info on Jaz drives.

Hardware: Comparison and Discussion

Discussion of hardware-related issues was reasonably consistent for the two sample years, differing by less than four percent. Inquiry/response ratios were also quite similar. By 1995 the discussions on the list were much more focused around computer-related issues only, with fairly clear drops in categories where people discussed other kinds of technologies. There was also a 34% increase in messages related to Mac computers in 1995. While this could be an anomaly of the month, it also may signify a shift in overall levels of usage or problems with Macintosh computers. Further analysis would be required to ascertain more of the reasons for the shift.

LANs and Servers

LANs and Servers Summary			
	# of Postings	% of sample	Inquiry/Response/Broadcast Ratio
Nov. 1992	5	1.8 %	3/2/0
Nov. 1995	65	19.9%	17/48/0

Figure 6.20 - Summary of LANs and Servers Messages

Messages in this category discuss networking in general and via the Internet from a technical standpoint – how to connect, which networking or server software to use, problems with modems and Internet service providers. They are not about client software or problems in doing tasks with the installed software, but instead consider setup, equipment and technical problems involving LAN and Internet access and administration.

LANs and Servers: 1992

In November 1992 there were 5 messages related to networking, LANS and servers. This was a very minor fraction of the traffic on EDTECH, possibly too small of a grouping to tell much about trends on the list in this subject area. The longest conversation (2 messages) discussed the best way to network a group of Apple IIGS's. In addition there was a question about Internet access in Upstate New York and one about using a LAN to deliver Computer Based Training (both with no responses.) Perhaps the most significant aspect of the discussion in this category in November 1992 was how few messages there were.

LANs and Servers: 1995

In the November 1995 sample there were 65 messages related to LANS, Internet access and servers, including 17 inquiries (26%) and 48 responses (74%). In terms of broad categories these messages generally discussed:

- Internet access, including modems and Internet Service Providers (42%)
- E-mail, Internet, WWW and other servers (37%)
- LAN's in general (22%)

Some of the longer conversations are briefly summarized below:

- Web servers: several people discussed whether to get a UNIX or a Mac WWW server for a school, and which type to purchase, offering recommendations and comments on various servers.
- How to keep a MAC from automatically initiating a PPP session—advise and opinions were offered on how to prevent this from happening.
- Problems with various modems and software crashing or having difficulties accessing America Online—it appears that many subscribers were having difficulty with specific brands of modems and accessing specific providers, like AOL, while using them. They shared experiences and tips.
- AT&T's announced plan to provide money to link all the United States' elementary schools—this relatively lengthy (8 message) thread mostly expressed people's skepticism that the plan would be all it was promoted as, but there was some interest in following its development and possibly participating.
- How to best connect a MAC lab to the Internet—this thread began with a question on whether it was better to get a dedicated regular phone line and

modem for each computer in the MAC lab or to get a single line with higher bandwidth and network the computers so all could access it. Several people replied, most supporting the networked idea.

- How to share CD's over a MAC network—a participant who had been told that it was difficult to share CD's via a MAC network checked to see if this was a common opinion or if it can be done without too much expense.

LANs and Servers: Comparison and Discussion

This area is the one with the greatest increase (17%) between 1992 and 1995 on EDTECH. It may correspond to the 17% drop in discussion of application software between the two years. It is possible that these changes come simply as a shift in the emphasis of the list itself. Or they may reflect an overall shift in the needs and interests of professionals in the area of educational technology from how to use specific pieces of software, to how to access and manage groups of computers and their interface with the rest of the world. Additional study would be needed to see if the apparent shift in emphasis on EDTECH is one that is also reflected over the same time period on similar lists, or if it appears to be a phenomena unique to EDTECH.

Administrative and Miscellaneous

Administrative and Miscellaneous Summary			
	# of Postings	% of sample	Inquiry/Response/Broadcast Ratio
Nov. 1992	6	2.2 %	2/4/0
Nov. 1995	4	1.2%	2/0/2

Figure 6.21 - Summary of Administrative and Miscellaneous Messages

This category, which contains relatively few messages, was set up to classify administrative notes from the editor and messages that don't seem to fall in any of the more substantive categories.

Administrative and Miscellaneous: 1992

In November 1992, there were six messages in the administrative and miscellaneous category. Four were requests for contact information or phone numbers for specific educational technology professionals and two were individual notes or comments to the list not directly related to educational technology.

Administrative and Miscellaneous: 1995

In November 1995, there were four administrative or miscellaneous messages. They consisted of one request that people send greetings messages to a school open house, one administrative note from the list editor about lost mail, a request for a copy of a videotape, and an offer to buy a 14.4 modem.

Administrative and Miscellaneous: Comparison and Discussion

It appears that the level of administrative and miscellaneous messages on EDTECH remained fairly consistent and low over the two sample periods. Possibly the editing was better during the second period, as there seemed to be fewer messages that weren't directly related to educational technology, but as the samples are so small, it would be difficult to determine if this apparent trend can be generalized to other months. Since this category is supposed to be small and generate minimal traffic, it appears that it was being handled well in both sample periods.

Net-Happenings Messages

Net-Happenings Summary			
	# of Postings	% of sample	Inquiry/Response/Broadcast Ratio
Nov. 1992	38	14.0 %	0/0/38
Nov. 1995	0	0%	0/0/0

Figure 6.22 - Summary of Net-Happenings Messages

Net-Happenings postings were an important part of EDTECH during its early years. These were postings by the future moderator of a popular broadcast list. Net-Happenings sends summaries or copies of messages of interest from other lists out to its subscribers. November 1992 was before the time when Net-Happenings split off to be its own list.

Net-Happenings Postings: 1992

In November 1992, 14% of the EDTECH list traffic (38 postings) were cross-posted by the future editor of Net-Happenings. These postings were all broadcast in nature, since the intent of Net-Happenings was to transmit useful information, but not to promote discussion about it necessarily. In general these messages were not used in calculating the descriptive statistics on EDTECH, as there were so many that they would distort the contributions of other list members. But if they had been included in the various main categories represented they would have been assigned as follows:

- Application software (3%)
- Internet software, sites & resources (55%)
- Research & Professional Development (26%)
- Curriculum (16%)

Net-Happenings Postings: 1995

Net-Happenings was a separate list by 1995, so there were no Net-Happenings postings on EDTECH.

Initial, Response and Broadcast Messages

The activity of initiating a conversation or providing information not previously requested to a group seems to be a different one than the activity of responding to the questions of others. Throughout the study of content, the

proportions of initial, response and broadcast messages were noted in each category, in order to give an additional indicator of the quality and general type of discussion on the different topics. An additional breakdown to determine if there is a difference in initiatory behavior by posters who fall in the more frequent or "multiple" groups rather than the less frequent groups was also calculated (see Figure 6.23). A multiple poster is someone whose participation likely was not comprised of a single broadcast message or a "drop-in" posting on a single topic.

As Figure 6.23 shows, while about half of all messages by single posters are messages which ask a question, broadcast informational material, or otherwise initiate a new conversation, a substantial majority of the messages of multiple posters consist of responses to messages previously posted to the list.

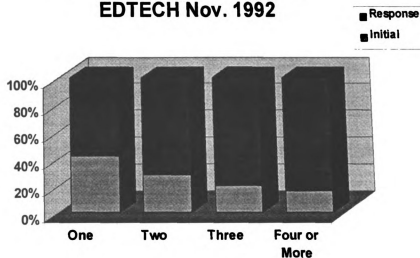
Initial vs. Response Messages EDTECH by Category of Poster								
November 1992								
	Single		Multiple (2)		Multiple (3)		Multiple (4+)	
Total Postings	93		36		54		50	
Initial or Broadcast Messages	39	42%	10	28%	11	20%	8	16%
Response Messages	54	58%	26	72%	43	80%	42	84%
November 1995								
	Single		Multiple (2)		Multiple (3)		Multiple (4+)	
Total Postings	260		142		87		207	
Initial or Broadcast Messages	131	50.4%	56	39.4%	25	28.7%	42	20.3%
Response Messages	129	49.6%	86	60.6%	62	71.3%	165	79.7%

Figure 6.23 - Initial vs. Response Messages

As the frequency of multiple posting increases, the percentage of total messages that are responses to topics, rather than initiatory communications also seems to increase. In part, this can be seen intuitively, as one could assume that someone who posted more might be reading the other messages more carefully, and thus tend more to respond to the content of the list. The exact percentages and how they vary with frequency are not obvious without analysis though. The response rate was overall higher in 1992 than in 1995. The general pattern seems similar (see Figure 6.24), but further analysis would be needed to tell more about why people tended to respond more during the earlier month.

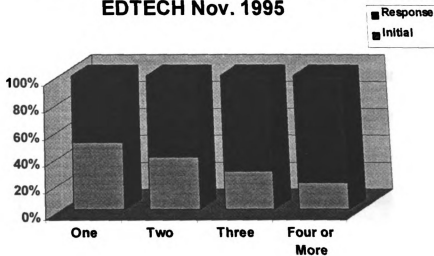
There were also 42 Net-Happenings postings in November 1992. These were not considered for this analysis, since they were essentially all broadcast messages, and atypical of what any participant besides the Net-Happenings moderator would post. Their inclusion in the statistics with the other postings would be sufficient to obscure the posting trends of more typical posters. They would definitely show a markedly different proportion of response vs. initial postings. For the most part, individuals who only send broadcast messages would be kept in analysis, considered an integral phenomena of the list. In this case however, as Net-Happenings was really a second embedded list, it was decided to remove these, in order to better reflect the behavior of general participants.

Initial vs. Response Messages EDTECH Nov. 1992



Number of postings participant made

Initial vs. Response Messages EDTECH Nov. 1995



Number of postings participant made

Figure 6.24 - Comparison of Initial vs. Response Postings

Figure 6.24 shows the pattern of decreasing initiatory message posting as frequency increases. Though these are clear differences in percentage, it appears that there may be a pattern here that would be worth studying in other contexts.

Summary, Conclusions and Areas for Further Study of Content

This Chapter looks at a broad overview of the messages and categories of message posted on EDTECH. It does not attempt to go beyond the obvious subject matter or indication of whether the message began or responded to a conversation. There is an apparent trend toward a greater degree of responsive messaging behavior, rather than initiatory, as the number of messages posted by any individual increases.

Many categories of topics maintained roughly the same percentage of activity over the two years. There were marked differences in the level of discussion on software, curriculum and LAN's and servers though, with a substantial drop in consideration of specific software, and an equally large increase in concern with LAN's, servers and Internet access. In each case, the specific topics within the general category did not fully match, giving the impression of internal change in these fields.

The fact that several topics retained nearly the same percentage of the total content of the list may indicate that EDTECH does reflect the field of educational technology, and what educators will discuss given a relatively free environment for discussion with other educators. It appears the policy, philosophy, professional development and research tend to comprise about 25% of people's discussion time. Hardware and operating systems account for another 25-30%. Software, curriculums and Internet resources make up another 25%, and the LAN's and Servers and miscellaneous postings account for the rest (at least in 1995). In 1992 there were many less LAN postings, and more in the areas of software and hardware resources.

Areas for further study.

There are many possible areas for additional studies. Formal content analysis could be done to determine some of the list dynamics at a deeper level. As well, some of the following questions (as well as many others) could be profitably addressed.

Does the trend toward more response postings continue with other ISP's or over different time frames?

In operating systems, would the stability continue to show up with regard to percentage of messages related to this topic over other samples and in different time periods. If it did, what does this stability imply? Are the topic

shifts in operating system messages a cyclic or random phenomenon or do they follow trends in the marketplace or in education in general?

In the area of LAN's and servers, does the change in number of postings indicate a shift in who is participating in the list, a difference in what educators are concerned with, or another factor which would bring about such a large shift in emphasis?

There are several differences between years. One that might tend to affect results overall is the apparent tendency toward greater response postings in 1992 than in 1995. Since this means that people might have been interacting with the list differently in the more recent year, it could be worthwhile to study the phenomena over additional time frames, and also survey or otherwise analyze what was happening in order to determine how this tendency might have reflected the general usefulness and norms of the list.

It could be worthwhile to analyze the content for whether the question asked was actually responded to usefully and in what time frame. Another study could also try to assess quality and style of answers, and if any conversational styles appeared to affect frequency or duration of posting.

Chapter 7

SUMMARY AND CONCLUSIONS

This study is designed to provide an in-depth description and discussion of the participants and content of the EDTECH e-mail list over a several year period. It concentrates especially on contrasting two similar months several years apart. Though the findings are summarized separately at the conclusion of each of the major analysis chapters, in this chapter they are synthesized and general conclusions that may go beyond what can be found in any individual chapter are offered.

History, Description and Characteristics

Though there were no specific research questions related to Chapter 3 on the history and general characteristics of EDTECH, summarizing it does offer certain insights into the growth and demographics of the list. It is important to note that this study was conducted by the main editor of EDTECH, who edited the list as a volunteer over the 8 years covered. The list sustained its growth and continuity of style because of the efforts of volunteer editors (mainly the researcher). EDTECH exhibited steady growth in terms of subscribers and numbers of postings since its inception in 1989. Though concentrated in the United States and Canada, it has a widely international constituency. As was typical of the Internet during the period of this study, there appear to be many more male than female active participants, but

this disparity shows signs of lessening in the period between 1992 and 1995 as proportionally more female subscribers began actively participating.

Frequency of Participation

There are three major research questions considered in the analysis of frequency of participation. They provide insight into the amount of interaction in professional online communities and some parameters for assessing effective amounts of interaction with e-mail lists.

Research Question 1: How frequently do EDTECH participants post?

Research Question 2: What proportion of the total list messages come from different frequency category posters?

Research Question 3: Is this frequency of posting consistent at different points in time?

The findings indicate that about one third of the group who posts are multiple posters or more active participants and about two thirds only post once in a given month. The percentage who post four or more times appears to be gradually increasing, moving from 6.5% to 12.5% between 1992 and 1996. It is not clear whether this is a different behavior or simply a reaction to the overall increase in postings. When considered by message, one third of all postings came from single posters and two thirds from multiple posters. This seems relatively stable across all three years analyzed. The data tends to indicate that EDTECH postings are distributed over a relatively consistent frequency pattern over time, particularly with regard to the categories of posters who make the posting. Initial analysis of duration

(see Chapter 5) shows that there was little overlap in participants between 1992 and 1995, so the frequency of posting was probably not due to posting characteristics of specific individual list participants. The pattern of variation in the data may be a phenomenon of the list itself and how it varies with response to change in the field and methods of electronic communication.

Continuity and Duration of Participation

There are four major research questions related to continuity and duration of participation. These attempt assess the usefulness of EDTECH to the field, and provide insight into how new lists may be better designed to optimize participation.

Research Question 4: Over a short range of time, how many of the participants who post at least once seem to continue posting regularly?

Research Question 5: Do people who post more frequently, also seem to post more regularly over a short range of time?

Research Question 6: Over a longer range of time, how many of the participants who post at least once seem to continue posting regularly?

Research Question 7: Do people who post more frequently also tend to post over a greater length of time (exhibit greater duration of participation)?

In terms of general continuity during the base months studied, about 35-40% of participants also posted in the previous month. Approximately the same percentage posted in both the base month and the following month. When participants posting in the base month and either of the contiguous months was calculated, the figure rose to between 50 and 60%. When those posting in the base month and both of the contiguous months were considered, the percentage dropped

to just under 20% however. Apparently people who post more frequently also post more regularly, as the charts show a steady increase in percentage of repeat posters as frequency of posting also increases. In general repeat participation drops to 20% or less within about a year from a given base month, and to 10% or lower after two years. This pattern of a substantial drop in repeat posting over time remains consistent when multiple posters are considered alone, but the percentages who continue to be active are much higher, especially in the four or more poster category. Because of this, there were few overlapping participants in Nov. 1992 and Nov. 1995. The general posting patterns were quite similar, showing a typical pattern of shift in participants over time, and typical patterns within frequency categories of posters. This lends credence to the idea that topic and general setup of the list plus the small number of continuing posters are sufficient to largely influence the dynamics of the list.

More frequent posting seems to predict a higher percentage of repeat posters in the future. Posting in the present appears to indicate more strongly that a person will post in the future than that the person did post in the past.

Content

The final three research questions involve classification and discussion of the content of the EDTECH list messages in order to examine what topics were being discussed by professionals in the field of educational technology over time, and how these varied. The topics discussed may offer insights into the trends and concerns of

professionals and might be used as conference topics, publications and avenues for further research.

Research Question 8: What categories of topics are discussed on an e-mail list on educational technology?

Research Question 9: Do these categories or the topics that comprise them vary over time?

Research Question 10: Does the percentage of messages that initiate a topic or broadcast information differ between different frequency category of posters?

In the Content chapter a broad overview of the messages and categories of messages posted on EDTECH was analyzed. No attempt was made to go beyond the obvious subject matter or indication of whether the message began or responded to a conversation. List messages were divided between eight main categories:

- Application software
- Curriculum
- Internet software, sites & resources
- Research, positions, schools & professional development
- Policy and philosophy
- Operating systems
- Hardware
- LANs, Servers & Internet connections

In general each of these categories includes between five and twenty percent of the messages sent.

Many categories of topics maintain roughly the same percentage of activity over the two years. There are marked differences in the level of discussion on software, curriculum and LAN's and servers though, with a substantial drop in

consideration of specific software, and an equally large increase in concern with LAN's, servers and Internet access. In each case, the specific topics within the general category did not fully match, giving the impression of internal change in these fields. There is an apparent trend toward a greater degree of responsive messaging behavior, rather than initiatory as the number of messages posted by any individual increases.

Areas and Questions for Further Study

Given so much material is available and relatively little research currently completed on professional e-mail lists, there are many possible areas for further research. This section offers a preliminary group of topics that might be worthy of additional study.

History, Description and Characteristics

The preliminary consideration of gender on EDTECH could be expanded into a variety of additional research projects. Of course several additional data points might make it more clear if a trend has been developing in terms of the gender of posters. As well, the types of contributions of different genders of posters, and if they appear to take different roles in the group dynamic could be of interest. The same consideration would apply to the physical location of participants. For example, whether the majority of participants are located on the West or East coast of the United States, might be valuable information for understanding list dynamics. How

participants other than those in the United States are interacted with on the list is also a useful question, i.e., are they answered more, less or the same amount when they ask questions? This could help investigators understand how to allow for various kinds of cultural bias in designing communications networks.

Frequency of Participation

Some dimensions related to frequency of participation that could also be more fully compared include the following:

- High Volume vs. Low Volume – number and size of communications in words or time it takes to view them. How does this affect participation rates?
- Widespread with regard to participation vs. not – how many active vs. passive participants does the list include?
- Synchronous vs. Asynchronous – What impact does immediate reception and/or ability to interact vs. separated in time have?
- More Accessible vs. Less Accessible – How does relative ease of sending and receiving change the way people interact with an e-mail list?
- Inexpensive vs. Costly – What is the cost in time or money of sending or receiving and how does that impact frequency of posting?
- Read or heard vs. Ignored - What percentage of postings are people actually reading or using?
- Interface - Does the relative pleasantness vs. unpleasantness of the interface impact participation?

With analysis of frequency, due to the volume of messages, it is difficult to look at groupings of more than a few months. It is possible that additional sampling, more random sampling, and variations on sampling techniques would yield useful

data to help researchers further understand frequency of posting on a discussion list like this and factors that might influence it.

Some additional general questions that might be researched include:

- Would the monthly percentages indicated in this Chapter 4 remain the same if they were averaged over a consecutive three month period?
- Though this study shows frequency within a particular time frame, it doesn't indicate ongoing rate which could vary over time due to many factors. What would be shown by studying different slices of time, or consecutive slices?
- One could observe the cumulative frequency within the group as time increases. What percentage of 2 time posters would become 3 time posters if the period were extended another week? 2 weeks? 3 weeks?
- Would frequency be different in different months such as April or July?
- What are daily rates? Average daily frequency? Could a smaller sample be extrapolated into an equivalent pattern?
- Would the apparent pattern of 2/3 single posters hold if tested over a number of different months? If so, does this phenomena show up in other listserv groups? Other types of online groups?
- Is this frequency signature consistent with only EDTECH? Is it also displayed by other lists or other lists configured in similar ways? Which list configuration variables might affect it and how?
- Does the change in the number or type of topics discussed in a month affect the frequency of posting?

In summary, study of the three base months shows patterns in frequency of posting that appear to endure over time. Alone, it does not make clear what effect the medium and content of the discussion have on establishing these patterns, but it does open a rich area for additional research into frequency patterns on e-mail lists.

Continuity and Duration of Participation

Some dimensions related to continuity and duration of participation that could also be more fully compared include the following:

- Short-range vs. Distant – How large is physical spread of participants and does it affect participation?
- Who produces the communication? What are additional demographic characteristics of posters. Does this impact duration or continued use of the list?
- Public vs. Multiple vs. Individual – who receives the communication? In what context are list messages received and used? How does this affect continued participation?

November 1992 and November 1995 appear somewhat different. Some of the following questions could be analyzed. Was there a gradual shift or an abrupt one? What events precipitated these changes? Was it only the general increase in Internet participation, or were other important factors involved? In addition to the charts included here, one could chart:

- Additional continuity from week to week and at 2, 3 and 6 months.
- Continuity via other set number of message spans, rather than time spans.
- Continuity via other categories, such as gender, location/node, and those who ask specific kinds of questions, or generate specific kinds of postings.
- Variation in reduction rates during different spans of time.
- Differences in reduction patterns among different types of posters.

From the November 1995 data, it appears that study of duration for more than 2 years isn't generally useful, since the amount of overlap in participants beyond

2 years is so low. Study of the types of messages of those who do remain for long periods of time might be useful though.

Content

There are many possible areas for additional studies. Since the archives are massive any number of different analyses could take place. Within commonly discussed characteristics of electronic mail group activity, list activity that could be further explored include where list activity falls on some of the following dimensions:

- Are postings more oriented toward helping others or more self-promotional?
- Quality and usefulness - is content more accurate and useful, speculative or inaccurate? Does it consist of opinions or facts? Is it mainly problem oriented, or more involved with exploring new possibilities?
- Bias - do messages showing certain biases or loyalties?
- Orientation - are postings meant for anyone or directed to a select group? Are they obvious to anyone or encoded (either in fact or by technical language)? What is the culture of the list (tone, civility, etc.)?

Formal content analysis could be done to determine some of the list dynamics at a deeper level. As well, some of the following questions derived directly from the study might be addressed.

- Does the trend toward more response postings continue with other ISP's or over different time frames?
- In operating systems, would the stability continue to show up with regard to percentage of messages related to this topic over other samples and in different time periods? If it did, what does this stability imply?
- Are the topic shifts in operating system messages a cyclic or random phenomenon or do they follow trends in the marketplace or in education?

- In the area of LANS's and servers, does the change in number of postings indicate a difference in who is participating in the list, in what educators are concerned with, or another factor which would cause a shift in emphasis?

There are several differences between years. One that might tend to affect results overall is the apparent tendency toward greater response postings in 1992 than in 1995. Since this means that people might have been interacting with the list differently in the more recent year, it could be worthwhile to study the phenomena over additional time frames, and also survey or otherwise analyze what was happening in order to determine how this tendency might have reflected the general usefulness and norms of the list. It might also be worthwhile to analyze the content for whether the question asked was actually responded to usefully and in what time frame. Another study could also assess quality and style of answers, and discover if any conversational styles appeared to affect frequency or duration of posting.

Summary of Areas for Further Study

In summary, a study of this nature may open as many questions as it answers, though it is able to offer insights and one structure for organizing and viewing data. The whole area of electronic conferencing is so new and changeable that it may take several more years to fully integrate with other research projects currently underway. Because of its increasing use and the growing number of questions by educators that want to know how best to create discussion with students online, it does appear to be an important area for further study and research, so that we can optimize the results gained by employing these technologies in education.

APPENDICES

APPENDIX A

Coding Instructions

Two examples of the exact method used to determine the number of participants in a given time period and how long they tended to continue participating are included in Appendix A. They appear here in order to provide additional information on the procedures used to gather the data of the dissertation from the message logs.

Coding Sheet A

Determining Number of Participants in a Given Time Period

For each time period being counted, obtain a listing of messages organized by author. This listing should contain name of author, e-mail address, date and subject of posting.

Note: the raw data should be cleaned to eliminate error due to the same person listing only an e-mail address or writing his/her name in various ways, e.g. Dr. Jones, Paul Jones, Paul Q. Jones, P. Jones, etc. This cleaning can be done on full copies of the log in a word processor. Go through the log message by message adding names in subject lines, where they don't appear, changing non-standard names into a standard format, and standardizing variant formats for names where possible. If a person uses initials in the From: line but the full first name in the body of the message, change the From: line to the spelled out first name format. If initials remain in both locations, leave the initials in the From: line, but note the gender of the person, if somehow indicated, and annotate the final printout(s) to indicate it.

In general leave the address as indicated in the From: line unless variant addresses are all indicated in the body of the message. In that case, if messages from the same person are received from variant addresses, standardize with the first address listed in the body of the message for all messages. If possible standardize the more common nicknames to only one version (the one used in the signature). In other words, make Bob/Robert pairs all either Bob or Robert, Bill/William pairs all either Bill or William, etc.

Note: this listing **MUST** be saved in plain ASCII format with the general formatting put in by Listserv left intact. When it is completed, request that the technical staff replace the old version of the log with the updated one and fix the WWW archiving program so that it will index the new log vs. the old one in the future.

Where variations on the name or address still remain at the time of coding, mark any unusual formats observed, and check against more standard versions of the author's name. If it is unclear whether two entries are from the same person or not, check the full content of the messages in the WWW archive and note any findings on the index sheet.

In the standard version, authors appear in alphabetical order by full first and last name. For example they would appear:

Amy Martin
John Smith
Mary Doe

Initials, titles, missing names and other variations should be noted and matching attempted with standard version postings. When a match is found, cross out the non-standard author line, and annotate the standard entry in the listing for that person to indicate that an additional posting was found.

When all data has been cleaned and reorganized, count and total the number of unique posters for that time period.

Coding Sheet B

Coding Instructions/Method—Continuity and Duration of Participation

For each time period being counted, obtain a listing of messages organized by author. This listing should contain name of author, e-mail address, date and subject of posting.

Note: the raw data should be cleaned to eliminate error due to the same person listing only an e-mail address or writing his/her name in various ways, e.g. Dr. Jones, Paul Jones, Paul Q. Jones, P. Jones, etc. Where errors still remain at the time of coding, mark any unusual formats observed, and check against more standard versions of the author's name. If it is unclear whether two entries are from the same person or not, check the full content of the messages in the WWW archive and note any findings on the index sheet.

In the standard version, authors appear in alphabetical order by full first and last name. For example they would appear:

Amy Martin
John Smith
Mary Doe

Initials, titles, missing names and other variations should be noted and matching attempted with standard version postings. When a match is found, cross out the non-standard author line, and annotate the standard entry in the listing for that person to indicate that an additional posting was found.

Calculate and write the number of postings each individual made in the base time period to the left of the person's name in the index.

Compare the base time period listing with other targeted time period listings. Using color or another appropriate marking system, annotate the original of the base time period index whenever there is a match with a person's name in a targeted time period listing. Create an annotation key and write it on the top of all base and targeted month index for further reference.

After finishing the annotation, calculate and record the number of authors in the base time period, and the number of matches in other time periods.

APPENDIX B

Selected Pages from the EDTECH List WWW Site

Several pages containing additional background information about EDTECH that appear on the EDTECH WWW Site at <http://www.h-net.msu.edu/~edweb> follow. These pages are meant to give additional detail and insight into how EDTECH worked. As well, a copy of the internal style guide for editors is included. This appears on the EDTECH WWW site at <http://www.h-net.msu.edu/~edweb/style.html>. It contains more information on the basis under which messages may be rejected to changed by an editor.

EDTECH



Welcome to the EDTECH WWW Archive site. This site was created to help make the archives and references offered by the many subscribers and participants in the EDTECH discussion list more accessible for reference and study.

The EDTECH List

With approximately 3500 direct subscribers internationally and about 8000 readers participating through news groups, gopher and WWW sites, EDTECH plays an influential role in determining the future directions of the uses of technology in education for many universities and school districts.

Subscribing and Managing your Subscription

This page offers directions for subscribing to the EDTECH list so that you receive messages in your individual mail. As well it contains requirements and tips for posting to EDTECH and directions for managing an EDTECH subscription or signing off the list.

Archived Messages

The discussions on EDTECH are archived by month, and organized by author, date, subject and thread. Not all months are available, but those that are can be found on our [archive site](#).

Other Resources:

- For another listing of EDTECH messages as well as much other information on education, try the [AskERIC](#) WWW site or go directly to AskERIC's copy of the [EDTECH archives](#) for 1994 and 1995.
- Summaries of current news of interest in the field of Educational Technology can be found at [EDUCOM](#)
- Many other educational materials can be found at [Web66](#) and [The Global Schoolnet Foundation](#).

EDTECH is sponsored by the [Michigan State University College of Education](#) as part of

its efforts to encourage professional education in the uses on technology in all educational settings.

EDTECH is affiliated with H-Net Humanities Online, which sponsors many e-mail lists involved with education and scholarship in history and the humanities

Please send comments to Vickie Banks: vbanks@h-net.msu.edu



EDTECH DISCUSSION LIST

Subscribing to EDTECH	How to Post	Tips & Guidelines	Listserv Commands
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The EDTECH discussion list was created to bring together faculty, educators, students and "interested others" in the field of educational technology to share ideas and information. Founded in February of 1989, for over seven years EDTECH has hosted a lively, ongoing discussion among leaders in the field on all aspects of the problems and triumphs associated with merging technology and education.

Subscription is free and subscribers automatically receive messages in their computer mailboxes, either as individual pieces of mail or as a longer daily digest. Messages can be saved, discarded, printed out, or forwarded to someone else.

Frequent topics of discussion include:

- problems in using educational technology and how to solve them
- articles and books subscribers have found stimulating and worthwhile
- information about course offerings and edtech graduate program requirements at various schools
- notable educational hardware and software, as well as junk one should avoid - conferences and events related to educational technology
- current dissertations and research projects in educational technology

This list is moderated. That means when you send something to EDTECH, it first automatically is forwarded to an editor. The editor is a volunteer who works with the list to help ensure a high quality discussion. The editor screens out communications not related to Educational Technology or obviously not intended or appropriate for EDTECH and handles them privately. The Editor forwards the rest of the communications on to all the subscribers of the list.

EDTECH is sponsored by Department of Counseling, Educational Psychology and Special Education at the Michigan State University College of Education and by H-NET Humanities Online, with generous assistance from the staff of the Michigan State University Computer Center.

EDTECH was originally located on the OHSTVMA node at Ohio State University. You may see old references to EDTECH@OHSTVMA in some publications. All EDTECH messages should now be directed to MSU.EDU rather than to OHSTVMA. We appreciate the time and effort put in by the staff at Ohio State during the EDTECH's first years.

Return to EDTECH Home Page.

*Please direct any comments to: EDTECH Editor 21765EDT@MSU.EDU
or to Vickie L. Banks vbanks@h-net.msu.edu or
Prof. Joe Byers jlbyers@pilot.msu.edu*

Subscribing to EDTECH

To subscribe to EDTECH send mail to: LISTSERV@MSU.EDU

Your message should say:

SUBSCRIBE EDTECH `firstname lastname`

Example: SUBSCRIBE EDTECH Joe Byers

Be sure to fill in the From: blank with your correct e-mail address. (Delete what appears there first, if it isn't the correct mailing address for you.)

You will receive a confirmation request in the mail. When you return it, you will be added to the EDTECH list and receive further information.

If you have difficulty, try sending the subscribe command above directly from your own e-mail account, or write to the Edtech Editor at 21765EDT@MSU.EDU

Posting Messages to EDTECH

Anyone with an electronic mail account can post a message to the EDTECH list. Simply address your e-mail message to:

EDTECH@MSU.EDU

We encourage posting from your regular e-mail account, rather than via a WWW connection to ensure correct addressing and proper formatting of your message.

Your message will be sent to the EDTECH editor who will forward it on the the EDTECH list if it is appropriate. Depending on the volume when you post, there may be a delay or a few hours to a day or two before you see your message appear on the list.

We welcome postings from any individual on the subject of using technology in any educational setting, and particularly foster and advocate educators helping each other grow and learn about using technology.

Since EDTECH is a discussion based list, preference is given to messages that may produce useful dialog on the list, that can benefit many people. Messages from non-subscribers requesting off-list, individual replies are only posted when time and volume permits.

All messages to EDTECH must be signed in the body of the message with full name and e-mail address to help improve the quality of the archives by clearly identifying individual posters.

Please note: EDTECH does not accept commercial advertising, spams, chain letters, flames and off-topic postings. These messages will be deleted by the editor upon receipt. (See [Tips & Guidelines](#) for more details on posting policies.)

EDTECH Tips & Guidelines

Here are a few tips for subscribers and posters to help you use this discussion group well:

Your first communication with EDTECH: In your first communication with EDTECH, we would appreciate hearing about you, your interests, your work, and/or your institution.

We recommend that new subscribers read through the recent postings at this archive site or on gopher or Usenet News before posting, to get up to date with current conversations on EDTECH.

Appropriate topics: Make sure that your posting relates to the uses of technology in education. Even though other topics may be of interest to you, they may be better placed on a different list. The EDTECH Editor screens out communications not related to Educational Technology or obviously not intended or appropriate for the EDTECH list (things like "HELP" or "Harry, It's nice to hear from you again!") and handles them privately.

Mail EDTECH doesn't accept: EDTECH does not post spams, chain letters, flames, most one liners and quips, copyrighted material without approval, encoded documents, documents in languages other than English unless accompanied by a full translation, the source code for computer programs, most appeals for money, messages that say only "me too" or "thanks", anonymous mail, mail that doesn't appear to be written by the person who signed it, messages that don't seem to make sense, messages that are so badly formatted that the average person wouldn't bother to read them, and other communications that probably wouldn't enhance the quality of the discussion.

Commercial Advertising: EDTECH does not accept any commercial advertising from individuals or companies, and will not post unsolicited commercial announcements. Some informational postings about conferences or available educational resources may be accepted from known non-profit educational institutions or groups.

Reposting the same message: In general, due to high volume, EDTECH only posts a message once. If you don't get the response you had hoped, and wish to ask again, please don't just send the same message over again. Explain what result you got from your first inquiry and provide significant additional detail. Also, since many people do not read EDTECH daily, please allow a few days before assuming you didn't get a sufficient response.

Separating your EDTECH mail from your other mail: When you get mail from EDTECH it may seem with some mail programs, at first glance, that it is all coming from the EDTECH Editor (21765EDT@MSU.EDU). This is not the case, however. The original sender is also usually named in the header, and people sign their mail in the body of their messages.

With other mail programs, such as Eudora, it appears that each piece of mail came from the individual, rather than from EDTECH. In this case, we recommend using one of the filters that come with the updated version of most mail programs to mark the EDTECH mail or send it directly to its own Inbox, so that it is easier for you to keep your list mail separate from your personal mail.

Replying to EDTECH mail: Please be careful when using the REPLY function to reply to EDTECH mail. That will generally send your reply back to the EDTECH list. Usually, to reply privately to the individual who wrote the message, you will need to address your reply specifically to that person. If it is not clear whether your message was intended for the list or not, the Editor may send you a note asking what you intended.

Signing EDTECH Postings: To make it easier for others on the EDTECH list to communicate with you directly, we require that you put a signature on your mail to EDTECH at the bottom of EVERY piece (even ones you are forwarding from other lists). The signature should include:

- your name
- your email address
- your university or professional affiliation

If you neglect to do this, the Editor may add it to your message for you or return your mail. This is necessary because the original address headers at the top are automatically stripped off by many mailers, so if your address isn't included in the body of your message, some subscribers won't know who posted it. EDTECH does not accept anonymous contributions.

Message Length: Because of the various problems inherent in sending and archiving very long messages, EDTECH prefers that you keep messages under 500 lines in length. It is often better to offer people the URL where they can find a very long document, if they are interested, than to send it to everyone.

Quoting Previous Messages: While it is sometimes important to quote a short part of a previous message that you are replying to in order to set up the context, it is not necessary to routinely quote the entirety of a previous message. If your mailer does this by default, we would appreciate your deleting the unnecessary parts of the previous message from your reply before sending. In particular, please do not include old quoted address headers that say To: EDTECH... in the body of your new message, as the listserver may reject your mail if you do.

Using the correct addresses: Please send maintenance communications/questions (eg., signoffs, procedures, archives, etc.) to LISTSERV@MSU.EDU Please send only substantive communications regarding educational technology to EDTECH@MSU.EDU.

USENET News Gateway: EDTECH is carried on USENET NEWS as bit.listserv.edtech. Some subscribers prefer to participate via our Newsgroup Gateway, rather than receive messages in their individual mailboxes.

The AskERIC Archive: To read conversations that have happened in previous

months on EDTECH or get another copy of a message you deleted, you can use the AskERIC service gopher or order archives from AskERIC via FTP.

Gopher: ericir.syr.edu port 70

or look under Other gopher servers in North America

FTP: ericir.syr.edu
login as anonymous /pub/EDTECH

Gopher is the probably the best way to access the messages. The FTP file is just one large text file, while gopher breaks them up into individual subjects to browse.

If you can't find the AskERIC gopher, have any technical problem or want to know more about the AskERIC service, please send a note to AskERIC (askeric@ericir.syr.edu).

Learning more about e-mail lists: If you are new to the Internet or to using e-mail lists, you might purchase one of the several currently available guides to the Internet available at your local bookstore. Check that the book includes a chapter on using LISTSERV mailing lists.

If you have any questions or comments about the EDTECH mailing list, please send them to the EDTECH Editor at 21765EDT@MSU.EDU

Useful Listserv Commands

If you are new to the Internet, you might find it useful to get one of the many introductory guides in your local bookstore and read through the chapter on using Listserv lists to become more aware of the range of commands one can use to manage an e-mail subscription. What follows is a list of the most commonly used commands.

Please avoid the common mistake of adding a signature or other comments to these commands. Since they will be read by a computer, you need to include only the simple command itself in the body of your message.

Please send these commands to:

LISTSERV@MSU.EDU

- To subscribe to EDTECH:

SUBSCRIBE EDTECH firstname lastname

Example: SUBSCRIBE EDTECH Joe Byers

Type the command in the first line of the body of the message (not in the subject line).

Note: Listserv will return a confirmation request to you before it adds you to EDTECH. You need to reply with the single word **OK** or at times with **OK (code #)** for it to finish verifying your address and processing your subscription.

- To cancel your subscription:
SIGNOFF EDTECH
- To temporarily stop EDTECH mail (for example when you go on vacation)

SET EDTECH NOMAIL

- To restore your EDTECH mail service:

SET EDTECH MAIL

- To receive EDTECH in the format of a single long message daily, with a table of contents at the beginning, rather than as individual messages.

SET EDTECH DIGEST

- To receive EDTECH in daily summary format, with just a listing of the subject lines and instructions on how to order any individual messages of

interest or look at them on the WWW site.

SET EDTECH INDEX

Note: If your mail is returned to sender (bounces) for more than a day or two, the EDTECH errors editor will set your subscription to INDEX for a week. At the end of that time, if it still is bouncing, you will be deleted from the list. If your account gets fixed, use the command below to return your subscription to normal mail status.

- To return a DIGEST or INDEX subscription to regular mail:

SET EDTECH MAIL

- EDTECH keeps a plain text archive of every message sent to the list. To find out which archived logs are available:

INDEX EDTECH

Note: A new log is created each week numbered with the year, the month and the week.

For example, EDTECH LOG9602B would contain all messages sent during the second week (B) of February (02) in 1996. At present Listserv keeps about 6 months of back logs for EDTECH.

- To order a log:

GET EDTECH LOG9602B

Substitute the correct log number for LOG9602B.

If your address format has changed or due to minor problems with your mailer, at times you may get an error message or no result for one of these commands.

If you have difficulty using any of these commands, please write to the EDTECH Moderator at 21765EDT@MSU.EDU for assistance.

EDTECH Editor's Style Guide

Basic Format

An EDTECH Message should have the following basic structure:

[HEADER]

Date: Current date (supplied by e-mail program)
To: EDTECH@MSU.EDU
From: EDTECH Editor – Name <EDADMIN?@H-NET.MSU.EDU>
Subject: Informative subject

[BODY OF MESSAGE]

From: FirstName LastName <userid@full.node>

This is the text of the new message from the current author. It should be the main part of the message.

OldUserFirstName OldUserLastName <olduserid@old.node> wrote:
>only the necessary quoted lines
>from the previous message here.

Full subscriber signature
Full subscriber e-mail address

Notes on Header section:

Subject Line: Editors should feel free to change the subject line on incoming messages to make them more clear and indicative of the content of the message. Subjects that say only something like "Help" or "Emergency" or "Question from New User" should be changed to reflect the nature of the problem. Abbreviations in Subject: lines are acceptable for brevity, but not when the abbreviation is so obscure that few would know what it means. When the Subject line seems obscure, make it clearer. Avoid using subject lines that unnecessarily begin with punctuation, asterisks or quotation marks. Archiving programs sort these as first on Subject lists, and some readers have discovered this and attempt to include these to give their messages an "advantage". Actually it makes the messages harder to find by someone looking for a topic, and depending on spacing, may cause problems for indexing programs. In general change Subject lines that are

formatted in ALL CAPS to regular upper/lower case format.

The convention of using Re: at the beginning of subject lines of messages that are responding to another post is preferred to other formats such as putting the word –Reply at the end of the subject line because archiving programs are set to organize message by threads based on the existence (or lack) of a Re: at the beginning of Subject lines. Likewise, Re: should never be used at the beginning of a Subject: line that initiates a topic, as then the archiving program will decide that the message is a follow-up and not treat it as one that begins a new topic. When alternative formats for Subject: lines are received, reformat them back to the standard. After the initial subject line on a topic has been established, editors should try to have all follow-up messages reflect it exactly, even when subscribers try to change it. This will allow all the messages in the thread to be grouped together. An exception to this is when the topic "drifts". If the editor notices that people are no longer discussing the original topic at all, it is permissible to alter the subject line to alert other subscribers that there has been a shift in the conversation that they might be interested in. The subject lines can be completely changed or it can for awhile use the 'was' convention, i.e., Subject: New Topic (was Old Topic)

Keywords. Though EDTECH has not yet adopted a formal keyword system, this may occur in the future. Remove keyword headings from cross-posted mail from other lists, as they don't conform to any EDTECH conventions and haven't been defined for EDTECH readers. EDTECH uses informal keywords on a few types of messages. These appear as the first word of the Subject: line in the header.

Position: For all job postings. Use Positions: if there is more than one job.

Introduction: Firstname Lastname

For any first posting that is mainly an introduction of a new subscriber.

Survey: To mark online surveys.

Greetings Request: To mark any request for greetings.

Summary: For summaries of responses given to a previously asked question

More informal keywords may be proposed and adopted in the future.

Notes on Body of the Message

From: lines

The first line of any message should read:

From: Firstname Lastname <userid@user.node>

The reason for this is that otherwise the archiving program will not be able to determine who the actual author of the message was, and will instead list the EDTECH Editor as the author. This doesn't let people look up messages in the archives by author name, and it also can confuse people about who wrote what. The editor should paste this in (or type it) if the original sender doesn't include it. Since the archiver sorts by first name, it's important to keep the syntax consistent. If a first name is available, use that, and not abbreviations or titles. In general delete Dr., Mr., Ms., etc. from the name. There may be some exceptions, for example Sister, where it is thought that people probably generally address the person in question with that title, e.g., Sister Anne Doe.

Also delete extraneous stuff (telephone numbers, job titles, institutional affiliations, etc.) from the From: line in the body of the message.

Only ONE From: line

The WWW archiving program was designed to pick up the LAST From: line it sees in the body of a message, remove it from the WWW page display, and use it as the From: line for the entire message. This can present a problem on quoted From: lines and on cross-posted messages where the original From: line is left in the body of the message.

There can be one and only one From: line in the body of the message, if we want the messages to be archived correctly. When there are additional From: lines, the editor should change the syntax on the additional ones. Recommended variations include:

X-From:

*From:

Quoted-From:

Or anything that will change it so that the word From: doesn't stand alone. The archiver appears to ignore inclusion markers >, so >From: and > From: don't seem to work to get it to ignore a secondary From: line.

Quoted text: Many people quote all or most of a previous message in the body of a new one. While some quoted text is useful to provide context, an overly large amount just fills mailboxes, makes the digests too long, and takes up space in the WWW archives (as well as making for hard to read messages).

Editors should cut back quoted text to include only what is necessary to provide needed context for someone who enters in the middle of the conversation. It is not necessary to quote the full signature (including quotations, graphics, etc.) of the previous poster. In general the much simpler format that follows is preferred:

Firstname Lastname <userid@user.note> wrote:
> first line
> second line
> third line

Though some mailers are using variations on the > inclusion marker, most main archiving programs still identify the > as the main way to identify quoted text and often display text preceded by > markers differently than other text. So where possible, it is preferred that the editor stick to the standard format on messages.

Signature area: All messages should contain the name and e-mail address of the sender at the bottom. Reasonable ASCII art, quotations, home page URL's, and other such information is OK. If clear commercial advertisements soliciting sales, giving prices of items, etc. appear, either remove them or return the message to the subscriber for changes, especially if it appears that the major reason for posting the message was to display the advertisement in the signature. If it is clear that the URL in the signature leads to a site containing pornography or other materials likely to be very problematic for teachers using the list with students, either return the message or remove the problematic URL from the signature. (If the problematic URL is in the content of the message discuss it privately with the poster rather than sending it out.)

Formatting: Return mail formatted in hypertext unless there is so little coding that it is easy to remove. Don't post messages that contain 2 versions of the message (hypertext and plain text). Return them or remove the hypertext version.

Remove any attachments. EDTECH never sends out encoded attachments, or binhex, MIME or uuencoded endings to documents.

If a message was written on a mail program that wrapped all the lines strangely, making it difficult to read, or that put = signs at the end of each line and other encoding in the document, the editor should judge if it is clear enough to be read, or so badly formatted that it should be returned for reformatting. It is not useful to send messages that are so long that no one will bother to read them.

Length: EDTECH has long had an approximately 500 line length limit. It is rare that an individual would write a message that long. If the individual is posting a conference announcement or reposting a paper other document, suggest an abbreviated version, an abstract, or the URL of a WWW site instead, if it is so long as to be unreadable. Many subscribers have limited mailbox space, and so do not want to receive very long messages, as they cause them to have full mailboxes. Also many subscribers receive EDTECH in Digest format, and long postings in the middle of a Digest make it harder to handle and read.

Languages other than English: Ask for a translation on messages posted in languages other than English. EDTECH posts messages in various languages, but only if accompanied by an English translation.

NOTES ON CONTENT:

In general, do not edit the original text of messages by a subscriber, as far as content is concerned. It is acceptable (but not required) to correct minor typographical errors or spelling errors, if the editor is positive these are errors and

not intended stylistic variations. If the content is unacceptable, return the message for revisions instead of editing it yourself.

Humor: As long as it relates to EDTECH, humor is OK to a reasonable extent. Watch for humor that is racist, sexist, ageist, etc., as this will invoke flame wars. Also watch for reposting of copyrighted humor than may not have been authorized by the original poster/copyright holder. Also watch out for "old jokes". Some pieces of net humor circulate every few months and have already been posted to EDTECH more than once. It isn't necessary to post and repost the same piece of net humor. Be careful that "humor" posted doesn't go so far that there would be tendency for EDTECH to be sued by someone because it was posted.

Hoaxes, Virus Scares and Chain Letters: Essentially never post calls for monetary contributions, letter writing campaigns, etc. There are exceptions to this, but there are numerous hoaxes with the premise that one should send money to someone, or business cards, etc. There are also a number of hoaxes that circulate saying that some organization has agreed to contribute something to someone if everyone takes some action (usually redistributing the message). Calls for action about children with cancer or some other deadly disease needing something have generally turned out to be false.

Almost daily EDTECH receives one or two copies of the "Make Money Fast" chain letter. Never forward this.

Most virus warnings relating to supposedly caught via e-mail are hoaxes and should not be sent. Unless the virus question relates to a personal experience in a real situation, it is probably a hoax. Even real experiences can be problematic if the cause indicated is not correct, so be careful about what they say so that companies don't complain or sue us about false virus warnings.

A lot of the political action, write your congressman, etc. calls for action are false. Check these carefully before considering posting them.

Any posting which says that the content, while doubtful, has been verified by some authority (the computer center at MIT, the U.S. government, etc.) is probably a hoax.

Spams: If someone has abused others on the Internet by posting the same messages to numerous e-mail groups, EDTECH generally doesn't post it too. In the case where the posting is highly relevant to EDTECH, an exception could be made, but generally if the message was so general that it was posted all over the Internet, it does not have sufficient EDTECH specific content for us to post it.

Commercial announcements: EDTECH doesn't accept commercial announcements, which we define as messages from individuals or profit making organizations that offer to sell a product or service for personal gain. Non-profit announcements are OK, though these should also clearly come from a non-profit and have information as well as a sales pitch for something in them. EDTECH does not exclude only large profit making organizations, but accept advertisements from small ones because they aren't making a lot of money (though people will argue with you that you should). If an advertisement from

someone's competition happens to get posted, this does not imply that EDTECH will also post advertisements from all the competition, just to be fair. In general an individual promoting the book he or she wrote, is an advertisement, even though we would accept a recommendation from someone else.

Often someone employed by a company subscribes to EDTECH for the purpose of responding to any question remotely related to the product sold by the company with an endorsement of the company's product. Watch for employees of a company repeatedly endorsing their company's product without providing much other input—this is a form of commercial advertising. It is more acceptable for a frequent poster to politely mention a product he/she is involved along with offering other information and other forms of participation in the list, but be careful this doesn't go to far.

Personal Messages: Don't post personal messages. This is sometimes a judgment call. If there are personal comments in the message that don't sound like they are really directed to everyone on the list, all the message says is "thank you" with no other content, the author of the message is suggesting to someone that he/she hire the author, etc., it is probably a personal message and should be returned to the author.

Flames: A level of civility should be maintained on the list, so any mail that is intentionally insulting to an individual or displays a degree of emotion that would tend to offend or upset others, might better be revised to show a more moderate tone. Be careful not to post anything that appears slanderous or is designed to obviously provoke damage of some kind to another, as EDTECH could also be held liable for the consequences of such messages. If someone demands a retraction or correction on a message, treat such a demand with care to be sure to rectify any unfair consequences that may have resulted to someone because of the posting of a message.

Messages from Minors: Do not publish the e-mail addresses or other contact information for a minor. Exception: some high school students are EDTECH subscribers and active participants. They can post like any other list member if they seem to be using the list in an appropriate manner to discuss educational technology. If, however, a request for key pals comes directly from a grade or high school student, the editor should request a contact with a parent or teacher before posting to be sure that the child will be able to deal with undesirable responses, pornography, junk mail, and other items which could come into the child's e-mail because of the posting. In general requests for key pals, greetings and other information to be directed to minors, should be sent to the mailbox of a teacher or parent, and not directly to an e-mail address that a child might have, as due to our cross-posting to Usenet News and WWW archives, there is no way for us to screen who might respond to postings made to EDTECH. The purpose of EDTECH is not really to provide help with ordinary grade or high school homework, so requests for general information, such as that one would ordinarily find in an encyclopedia, should generally redirect the child to his/her teacher, parent or school librarian, rather than be published along with the child's e-mail address.

One liners: One liners are generally not acceptable as postings. For example messages that say only:

"Thanks"
"Amen"
"Me too"
"I agree!"

These should generally be politely returned with a suggestion that the subscriber either elaborate more for the list or send the posting directly to the individual it was intended for.

Personal Mail: Personal mail which requests an item be sent directly (responses to offers of papers or other information) should be returned to sender for redirection. Also other personal comments or information not likely to have been really meant for the list should be returned.

Requests that anyone who responds privately to some other list message, also send a copy of the response to the author become too complicated to post. Suggest instead that the person explain and give additional detail about the problem he/she also has and so evoke additional responses on the topic.

Comments about the list: Comments about the list, commands, or administrative mail should rarely be posted. In general these are handled privately by the editor. It is not necessary to ask the whole list how to sign off or change a setting to digest, when the editor can help. Also it is not necessary to broadcast messages like "Get me off of here, I can't stand getting all this mail!" to everyone on the list. Comments accusing the editors of censorship generally happen because mail was delayed or lost, and can be solved by finding and posting the missing message (unless it was a commercial announcement.)

Occasionally the list will engage in a meta-discussion about how the list should be run, but not often. This is mostly because such discussions tend not to be very productive. Because of practical and economic reasons, most of the suggestions are things the editors don't have the time or resources to do. If someone has sincere and reasoned suggestions or criticisms and appears to be someone who genuinely cares about how EDTECH functions, we generally invite the person to volunteer to help work on the area in question, rather than generating a general debate among all subscribers.

At times, a meta-discussion about the direction EDTECH is taking might be productive, and editors who feel the need for one on the list should talk over the best way to generate and manage it.

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