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ABSTRACT

World-wide communication, information gathering, and information sharing are possible through the Internet. Nebraska and its educational community are in the process of connecting to this resource. Fifteen Educational Service Unit (ESU) servers, located across the state, provide access to the Internet for almost all public K-12 schools. Currently, an evaluation team from the University of Nebraska at Omaha, in cooperation with the ESUs, is investigating the impact of the statewide effort to connect schools and teachers to the Internet. This summary and report are related to the first 18 months of a comprehensive 5-year evaluation process, which focuses on examining the general impact on teachers, students, and schools. A pre-training survey of all Nebraska ESUs (3,776 surveys) was conducted in order to provide an evolving baseline on Nebraska teachers who enter the ESU training process. Following training, in addition to a post-training survey (N=659), information was gathered from server data analysis, classroom observations, and teacher interviews. Each of the data sources were examined for related implications, with cross-referencing between sources conducted when appropriate. Implications from each data source are examined in the report. General implications include: (1) significant progress is being made for the implementation of statewide connectivity; (2) community interest is starting to parallel educational interest; and (3) Nebraska continues to play a national leadership role. Appendices provide: pre- and post-training survey; pre- and post- training survey graphs; Internet coordinator's data request form; innovative user electronic mail protocol; and innovative user interview protocol. (Contains 22 references.) (MAS)

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Nebraska K-12 Internet Evaluation Progress Report - 18 Months

July 30, 1995

A Progress Report Associated with the Nebraska K-12 Internet Evaluation,
Undertaken Cooperatively By the University of Nebraska at Omaha
and the Nebraska Consortium of Educational Service Units

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Nebraska Internet Evaluation Report Executive Summary - 18 Months July, 1995

Introduction:

The Internet, the international network of computer networks, is an exciting addition to K-12 schools. World-wide communication, information gathering, and information sharing are possible using this one source. Nebraska and its educational community are in the process of connecting to this resource, with the passing of LB 452 in 1993. Fifteen Educational Service Unit servers, located across the state, provide access to the Internet for almost all public K-12 schools. Schools are being connected by modem dial in, as well as by direct connections. Also, educators are being trained across the state to effectively use the Internet to improve the education of their students. Currently, an evaluation team from the University of Nebraska at Omaha, in cooperation with the ESUs, is investigating the impact of the state-wide effort to connect schools and teachers to the Internet. This summary is related to the first 18 months of a comprehensive 5 year evaluation process, which focuses on examining the general impact on teachers, students, and schools of these statewide connectivity and training efforts.

Selected Preliminary Results:

The evaluation process is 18 months into its 5 year process. Each of the data sources were examined for related implications, with cross-referencing between sources conducted when appropriate. The following are some of the implications referenced and explained in the formal 18 month report document.

Implications from the Pre-training survey:

A fairly wide range of survey responses from the pre-training instrument has been accumulated (3776 surveys), representing all Nebraska ESUs, in order to provide an evolving "baseline" on Nebraska teachers who enter the ESU training process. The following conclusions were identified from the pre-training survey analysis, and are supported in the 18 month report.

- 1) Many teachers report knowing very little about telecommunications before entering the Internet related training.
- 2) A variety of teachers are becoming involved in the Internet training, with the second year of training accessing a higher percentage of teachers in the early grades.
- 3) Initial training sessions are beginning to access a higher percentage of teachers who are less computer literate in general.
- 4) Examples of innovative classroom uses of the Internet need to be widely distributed to the teaching population.

Implications From the Post Survey Data:

A post training survey instrument was sent by electronic mail to all pre-training survey respondents, with 517 responses returned. A follow-up paper copy of the survey was then sent via US. Mail, to 400 randomly selected non-respondents, with 142 surveys completed and returned. Implications from this survey included the following.

- 1) Teachers use the Internet often, and most teachers report accessing the Internet at school, although few Internet-connected computers are readily available to them.
- 2) Nebraska educators' initial use of electronic mail supports that they are using the Internet in very appropriate ways.
- 3) Educators tend to use specialized computer personnel as their primary source of help.
- 4) Relatively few Nebraska students are currently using the vast and varied resources of the Internet.
- 5) Principal support seems important to Internet use.
- 6) Responding educators plan to use the Internet and acknowledge its value to them for communication and information gathering.
- 7) Nebraska educators also see value in having their students use Internet and its information gathering capabilities.
- 8) A majority of Nebraska teachers, who have had Internet training, are comfortable with computers, and a high percentage feel that computers are very important to the future of their profession.

Implications from the Server Data:

Based upon an analysis of server data information, the following implications are identified and described in the 18 month evaluation report.

- 1) The statewide pace of training is substantial.
- 2) Statewide connectivity is progressing well, but the reliance on modem based technology at many schools is a significant barrier to progress.
- 3) School districts must work to become more self-reliant on follow-up Internet support.

Implications from Innovative Uses of Teachers and Projects:

Several initial implications are apparent from the classroom observation and teacher interview data related to the evaluation at the 18 month reporting period. These implications will no doubt evolve as additional data is accumulated and analyzed for later reporting periods.

- 1) Student use appears to be a critical component to "innovative" curricular use.
- 2) Student "research" using the Internet appears to be at a considerably higher level than in more traditional activities.
- 3) Most innovative curricular uses were multi-disciplinary in nature.
- 4) Innovative uses by teachers typically overcame significant technical and instructional barriers
- 5) Innovative classroom uses often accessed "non-traditional" classroom resources.
- 6) Teacher and school based grant opportunities, such as Nebraska Lottery funds, are an important catalyst to innovation.

General Implications:

Three general implications are also apparent from the evaluation process at the 18 month reporting period, and are identified and described within the formal report document.

- 1) Significant progress is being made for the implementation of LB 452.
- 2) Community interest is starting to parallel educational interest.
- 3) Nebraska continues to play a national leadership role.

In summary, it was apparent from these evaluation implications that Nebraska has an excellent start to the implementation of LB 452, and its integration of the Internet into the K-12 schools in Nebraska. The continued high level of cooperation between many state institutions would seem critical to continued progress in the state. Based upon a review of the relevant literature, and other status reports from other states, it is also clear that Nebraska is well ahead of a considerable majority of states in bringing the power of the Internet into the K-12 classroom.

Future Goals:

Future evaluation goals for the next reporting period center on expanding and refining the evaluation process, expanding the documentation activities related to innovative uses and projects, and further examining the related plans and activities of other states.

Dissemination:

Additional information associated with this executive summary can be requested by sending an electronic mail request to k12eval@unomaha.edu, or by referencing the SITE 95 and NECC 95 conference proceedings. An electronic newsletter is also available.

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Internet Evaluation Progress Report 18 Months

A Progress Report Related to the Nebraska K-12 Internet Evaluation Project,
Undertaken Cooperatively By the University of Nebraska at Omaha and the
Nebraska Consortium of Educational Service Units

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July 30, 1995

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Nebraska Internet Evaluation Project

18 Months Progress Report

Completed July 30, 1995

Purpose

The purpose of this report is to provide a progress report (after 18 months) related to the five year Nebraska K-12 Internet Evaluation Project, undertaken cooperatively between the University of Nebraska at Omaha and the Nebraska Consortium of Educational Service Units.

Evaluation TEAM

The following are the team members conducting the evaluation project.

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Evaluation Project Goals (18 Month Period)

The goals of the Internet Evaluation Project focus on a long range assessment of the integration of the Internet into the K-12 Nebraska schools and the support related to this integration delivered by the Nebraska Educational Service Units. This 18 month report references progress related to each of these goals, which are targeted at providing a comprehensive and formative evaluation approach to examining the "Nebraska model" for integrating the Internet into K-12 education. The goals for the first 18 month period of the Evaluation Project were:

- 1) To implement a pre-training survey for newly trained teachers
- 2) To conduct a follow-up survey for trained teachers
- 3) To design a telephone interview protocol and conduct selected interviews
- 4) To gather general server data related to the ESU activities
- 5) To summarize initial classroom observations of innovative uses of the Internet
- 6) To summarize initial observations related to statewide "Internet projects"
- 7) To begin to design an Internet "World Wide Web page" related to the evaluation
- 8) To compare Nebraska's progress to the relative progress of other states

Background

Many states across the United States of America are beginning to plan and initiate steps to provide access to the "Information Superhighway", as represented currently by the Internet, in their public schools. In part, a vision for this effort has been identified by the federal government. As stated by Vice President Gore, in a recent address to the communications industry:

Today, we have a dream for a different kind of superhighway that can save lives, create jobs and give every American young and old, the chance for the best education available to anyone, anywhere. I challenge you....to connect all of our classrooms, all of our libraries, and all of our hospitals and clinics by the year 2000.

(National Institute of Standards and Technology, 1994, p. 57)

The Internet is the world's largest computer network. It was born more than 20 years ago as a U.S. Defense network, with the purpose of supporting military research, through a communications structure which could survive a limited nuclear attack. In the late 1980's the National Science Foundation extended the network to encompass scientific and higher education institutions. Since that time, the Internet has expanded commercially and internationally, and is now estimated to be resident within more than 155 countries worldwide (Quarterman & Carl Mitchell, 1995b; Calcari, 1994; Pawlowski, 1994), and serving over 27 million users (Quarterman & Carl Mitchell, 1995a). It is growing rapidly, with estimates for new hosts being added at one approximately every 30 minutes (Calcari, 1994). The Internet based World Wide Web system is evolving even more quickly, and a recent MIT researcher noted that there was as much information passed over the Web in 15 minutes of 1994, than in all of 1992 combined (Gray, 1995).

The Internet provides the efficient exchange of computer-based data across the globe. In addition, it provides users access to a wide variety of long range network based computing (called telecomputing) activities, including direct access to electronic mail, network supercomputers, and extensive on-line databases, software, and newsgroups. Within the general population, the interest in these new informational resources has been significant, and it is now estimated that more than 1 in 6 homes have at least one modem connected computer (Cohen, 1994). The use by commercial business is even more impressive, and is expected to include more than 27 million employees of such firms by 1995 (Quarterman & Carl-Mitchell, 1995a, Calcari, 1994). Although at first lagging behind both industry and home use, the use of the Internet in schools is quickly expanding, and a late 1994 government report indicated that 35% of a random sample of American educators reported access to the Internet somewhere within the school, and 3% of the sample reported access within their own classroom (Heavyside, Farris, Malitz, & Carpenter, 1995).

Many K-12 schools and school districts are now showing considerable interest in being a part of the Internet and its related telecomputing activities. For the K-12 classroom, Internet access offers the potential of "breaking down the classroom walls", and linking a classroom microcomputer with any computer on this international network. Thus, a fifth grade student in Fort Calhoun, Nebraska might exchange electronic mail with a fifth grade student in Melbourne, Australia, or receive actual pictures of Mars from NASA, or perhaps search a national database for the most recent U.S. Supreme Court ruling. Popular Internet sites such as NASA's Spacelink,

are now visited by more than 1,000 people per day, and support teacher access to everything from lesson plans, to specific information on current space shuttle flights (Cohen, 1994). The real time communication capability of such technology is quite remarkable. On a recent international bicycle trip through Guatemala, trip organizers were able to receive and send electronic notes to K-12 students across the world, to help them better understand Guatemala, and follow their progress (Smith, 1995). It is anticipated that the Internet will parallel or even exceed the substantial adoption into education of the classroom microcomputer (Krol, 1993). The skills that students gain in such telecomputing activities are also becoming better understood, and the use of telecomputing in the K-12 classroom appears to be very consistent with what many businesses are desiring of high school graduates in the workplace (Reinhardt, 1995; Sheingold, 1991).

Although the nation's K-12 teachers are beginning to have access to the Internet, many of their current activities are facilitated by the knowledge, equipment, and motivation of individual teachers (Willis, 1993). However, formal statewide support in the nation is increasing, and many states are beginning to initiate statewide plans for supporting at least some type of general technology network (television, satellite, telecomputing, etc.) for their resident schools and districts (Cohen, 1994). Nine states were identified as early leaders in K-12 telecomputing planning and adoption, through their early statewide plans (Kurshan, 1990; McAnge, et. al., 1990; Web Associates, 1993), and included Arizona, Florida, Indiana, New Mexico, Pennsylvania, Texas, Virginia, West Virginia, and Nebraska. This group has quickly expanded, and now 33 states report supporting at least some sort of telecomputing network related to education (Office of Technology Assessment, 1995; Cohen, 1994), and most of the remaining states are beginning to develop statewide plans and consider statewide efforts. Yet, as stated by the Office of Technology Assessment, these networks "vary considerably in their scope, sophistication, and support services" (p. 114). With such variation, many states are beginning to look to the "early adopters" for important input related to refining their evolving statewide efforts and plans.

The state of Nebraska is in position to help provide considerable leadership in the emerging national efforts to realize the potential of telecomputing and the Internet in K-12 education, and is carefully documenting its own model for integrating the use of Internet into its K-12 schools. Nebraska has long had a strong support network of 19 Educational Service Units, which have since 1966, provided the state's public schools with many resources, including significant computer data and information services (Nebraska Educational Service Units, 1991). Building on this statewide expertise, the Nebraska Legislature recently passed Legislative Bill 452, which authorized the local educational service units to levy an additional property tax to support the introduction of Internet equipment and teacher training for Nebraska schools. This statewide effort is well underway, and the Educational Service Units are now working with their local school districts to bring them on-line (Nebraska Department of Education, 1993).

A research team from the University of Nebraska at Omaha has been contracted by the Nebraska Educational Service Units to evaluate and document this statewide approach to providing Internet connections and support for schools. This team, directed by Dr. Neal Topp, Dr. Neal Grandgenett, and Dr. Elliott Ostler, is currently investigating action research questions that include: What is the frequency and patterns of Internet Usage by teachers and students in the state of Nebraska following teacher Internet training? Is the usage pattern spreading? Are trained teachers sharing their expertise with other teachers? Are there relationships between teacher characteristics, teacher perceptions, and teacher Internet use? Does the Internet

impact the role of teachers? How does Internet usage impact students and their learning? How do teachers perceive Internet usage to be impacting schools? What are the strengths and weaknesses of the Nebraska model for involving Internet in K-12 education?

Within the partnership with the Nebraska Educational Service Units, the University of Nebraska at Omaha research team is coordinating the evaluation project, and the Educational Service Units are facilitating the data collection procedures. The evaluation process is both formative and comprehensive in nature, and will be ongoing for at least five years. Results and information related to the evaluation are also being reported to the Office of Technology Assessment of the U.S. Congress, and the U.S. Department of Education.

As a leader in the K-12 integration of the Internet, Nebraska is aware of the responsibility of carefully documenting the effectiveness of its K-12 telecomputing model, as these activities impact upon the classrooms and students of Nebraska. This is the purpose of the Nebraska Internet Evaluation Project. The more we know about the success and failure of statewide Internet activities in K-12 environments, the better able we will be to help all students and teachers use the Internet to its full potential, not only in Nebraska, but in the United States as a whole.

Evaluation Questions

The current evaluation questions for the project are listed below, and correspond to the initial evaluation questions developed by the University of Nebraska at Omaha Evaluation team, with input from the Nebraska Educational Service Units. The questions reflect a five year, long term approach to the evaluation, and are only partially addressed in this current 18 month report.

- 1) Does the Internet impact the role of teachers?
- 2) What are the characteristics of teachers who continue to use the Internet following training?
- 3) What are the characteristics of teachers who do not continue to use Internet following training?
- 4) What are the perceptions of teachers concerning Internet potential before and after initial training?
- 5) What are the perceptions of teachers concerning Internet potential after an initial period of usage?
- 6) Is the Internet used by teachers after training?
- 7) What are the reasons for using or not using the Internet? (i.e. lack of phone line? lack of computer access? etc.)
- 8) What are the innovative classroom uses of the Internet in Nebraska?
- 9) How does the Internet appear to impact student learning in the classroom?
- 10) What are the general characteristics of Internet related projects in Nebraska?
- 11) How does Nebraska compare to other states regarding the Internet?

Design of the Evaluation

The design of the evaluation is essentially that of an "impact analysis". In evaluation studies, impact analysis can be defined as "determining the extent to which one set of directed human activities affected the state of some objects or phenomena, and determining why the effects were as large or small as they turned out to be"

(Mchr, 1992, p.1). In this evaluation project the evaluation design is focused on research based questions which seek to determine the general impact of the Internet training of teachers, facilitated by the Educational Service Units, on K-12 education in Nebraska, or specifically on teachers and their students in the classroom.

Within the evaluation three types of data are being examined related to the research questions. These data types include 1) teacher survey data, 2) machine based server data, and 3) observed classroom uses and projects. The observed classroom uses also include teacher interviews, and an examination of key integration projects happening in the state. The eighteen month evaluation period of the project is associated primarily with formalizing the data collection and analysis procedures for each of these three areas, and then summarizing the initial results.

Descriptive statistics were targeted during this 18 month reporting period, with correlational and pattern analysis planned for later reporting periods. Data runs for each 6 month analysis period will be cumulative in presentation, with some trends illustrated at one year intervals as the project evolves during the five year period. For a peer group reference, a brief investigation of the general progress in other states related to the Internet is also being conducted.

Progress in each of the three data areas, as well as some implications apparent at the 18 month reporting period, are summarized in the following subsections.

Progress of Survey Analysis

To help get baseline information and perceptions from teachers before and after they received the Internet training offered by the Nebraska Educational Service Units, a 30 question pre-training survey and a 44 question post training survey were developed. The pre-training survey was designed to be read by NCS scan equipment, and the post training survey was designed to be delivered by e-mail. Both surveys were field tested and refined based on teacher and trainer feedback. A photocopy of these instruments is provided in Appendix B and Appendix C.

Pre-Training Survey Analysis

Early incorporation of the pre-training survey into the training program by the Educational Service Units has been excellent, and a total of **3776** pre-training surveys have been analyzed, reflecting 2643 surveys for year 1, and 1133 surveys for the first six months of year 2. All educational service units are represented. The surveys will continue to be given as teachers are trained across the state, providing pre-training baseline information from teachers that will be summarized each year of the five year project to examine changing demographics and teacher characteristics.

During years 3-5 of the project, follow-up surveys and interviews will be correlated with these initial surveys to examine additional patterns in teacher roles, perceptions, and classroom activities. The 18 month descriptive statistics for the pre-training survey were computed by use of a SPSS program, and examined based on a year 1 to year 2 comparison, although only the first six months of year 2 are available at the time of this 18 month reporting period.

Listed below is a summary of the responses to each question asked on these initial teacher characteristic surveys for both year 1 and year 2 (first 6 months of the year), which provides a preliminary overview of the characteristics of teachers beginning Internet training. Related graphs are available in Appendix D, and apparent implications for pre-training survey data are reported in the Evaluation Implications Section, later within this report. The response percentages included the following:

1. What is your age?

Yr 1: A. Under 30 (11.1%) B. 30-39 (22.7%) C. 40-49 (43.1%) D. 50-59 (19.1%) E. 60 or over (2.8%)
 Yr 2: A. Under 30 (13.5%) B. 30-39 (24.6%) C. 40-49 (38.9%) D. 50-59 (20.3%) E. 60 or over (1.6%)

2. How many years have you taught school?

Yr 1: A. 1-5 yrs (13.2%) B. 6-10 yrs (14.3%) C. 11-15 yrs (16.5%) D. 16-20 yrs (19.2%) E. >20 yrs (28.9%)
 Yr 2: A. 1-5 yrs (16.9%) B. 6-10 yrs (16.4%) C. 11-15 yrs (16.1%) D. 16-20 yrs (18.2%) E. >20 yrs (26.2%)

3. Approximately how many students per grade are in your school district?

Yr 1: A. <51 (38.6%) B. 51-100 (11.4%) C. 101-200 (7.6%) D. 201-300 (6.3%) E. >300 (27.9%)
 Yr 2: A. <51 (39.0%) B. 51-100 (11.6%) C. 101-200 (5.8%) D. 201-300 (9.6%) E. >300 (26.6%)

4. Do you have a school Technology Coordinator?

Yr 1: A. No (26.3%) B. Yes/ District (25.4%) C. Yes/ Building (16.8%) D. Yes/District & Building (22.2%)
 Yr 2: A. No (23.9%) B. Yes/ District (30.0%) C. Yes/ Building (14.3%) D. Yes/District & Building (26.6%)

5/6. What area are you assigned?

Yr 1: A. Admin. (14.2%) B. Ln. Arts (9.6%) C. Fn. Arts (5%) D. For Lang (2.7%) E. Math (7.7%)
 A. Med. Sp. (13.3%) B. Science (6.4%) C. Soc. St. (4.3%) D. Sif. Con. (18.7%) E. Other (27.3%)

Yr 2: A. Admin. (9.1%) B. Ln. Arts (14.4%) C. Fn. Arts (5.2%) D. For Lang (3.9%) E. Math (6.2%)
 A. Med. Sp. (4.3%) B. Science (5.5%) C. Soc. St. (4.3%) D. Sif. Con. (31.6%) E. Other (26.8%)

7. What grade level are you assigned?

Yr 1: A. PreK-3 (8.6%) B. 4-6 (11.6%) C. 7-8 yrs (10.1%) D. 9-12 yrs (31.3%) E. K-12 yrs (29.1%)
 Yr 2: A. PreK-3 (16.9%) B. 4-6 (14.3%) C. 7-8 yrs (13.4%) D. 9-12 yrs (23.9%) E. K-12 yrs (24.9%)

8. What is your gender?

Yr 1: A. Female (67.5%) B. Male (31.6%)
 Yr 2: A. Female (70.8%) B. Male (27.6%)

9. What is your degree status at this time?

Yr 1: A. BA/BS (15.0%) B. BA/S+15 (31.5%) C. Master (16.8%) D. Master+15 (27.4%) E. Doctorate (1.8%)
 Yr 2: A. BA/BS (17.2%) B. BA/S+15 (35.5%) C. Master (15.7%) D. Master+15 (20.6%) E. Doctorate (2.4%)

10. How often per month do you use cooperative learning groups in your classroom?

(leave blank if this question is not applicable to your situation)

Yr 1: A. 0 (5.4%) B. 1-2 (13.9%) C. 3-5 (16.0%) D. 6-8 (9.5%) E. >8 (22.9%)
 Yr 2: A. 0 (6.5%) B. 1-2 (15.3%) C. 3-5 (17.7%) D. 6-8 (11.6%) E. >8 (22.0%)

11. How often per month do you have students develop projects?

(leave blank if this question is not applicable to your situation)

Yr 1: A. 0 (9.7%) B. 1-2 (31.0%) C. 3-5 (12.3%) D. 6-8 (3.5%) E. >8 (6.7%)
 Yr 2: A. 0 (10.2%) B. 1-2 (34.1%) C. 3-5 (11.7%) D. 6-8 (3.6%) E. >8 (6.2%)

12. How often per month do you lecture or demonstrate to your students?

(leave blank if this question is not applicable to your situation)

Yr 1: A. 0 (1.7%) B. 1-2 (4.1%) C. 3-5 (9.3%) D. 6-8 (10.2%) E. >8 (48.1%)
 Yr 2: A. 0 (1.5%) B. 1-2 (5.1%) C. 3-5 (7.6%) D. 6-8 (9.9%) E. >8 (51.9%)

13. How often per month do you have students use the computer?

(leave blank if this question is not applicable to your situation)

Yr 1: A. 0 (8.2%) B. 1-2 (11.3%) C. 3-5 (10.9%) D. 6-8 (6.4%) E. >8 (36.9%)
 Yr 2: A. 0 (10.5%) B. 1-2 (13.1%) C. 3-5 (9.5%) D. 6-8 (6.4%) E. >8 (37.3%)

14. How often per month do you have students research (on their own) a topic?

(leave blank if this question is not applicable to your situation)

Yr 1: A. 0 (12.2%) B. 1-2 (32.2%) C. 3-5 (9.7%) D. 6-8 (3.1%) E. >8 (8.4%)
 Yr 2: A. 0 (16.8%) B. 1-2 (31.1%) C. 3-5 (9.4%) D. 6-8 (2.6%) E. >8 (4.4%)

15. How often per month do you give students assignments that involves writing?

(leave blank if this question is not applicable to your situation)

Yr 1: A. 0 (4.0%) B. 1-2 (13.2%) C. 3-5 (12.5%) D. 6-8 (8.6%) E. >8 (25.0%)
 Yr 2: A. 0 (4.5%) B. 1-2 (11.9%) C. 3-5 (16.1%) D. 6-8 (9.4%) E. >8 (29.1%)

16. How often per month do you have students use the library resources at your school?

(leave blank if this question is not applicable to your situation)

Yr 1: A. 0 (7.7%) B. 1-2 (22.2%) C. 3-5 (15.2%) D. 6-8 (5.7%) E. >8 (15.2%)
Yr 2: A. 0 (9.1%) B. 1-2 (24.2%) C. 3-5 (18.3%) D. 6-8 (5.4%) E. >8 (12.1%)

17. How fast can you keyboard/type? (wpm descriptions on survey instrument)

Yr 1: A. Very Slowly (4.2%) B. Slowly (9.4%) C. Moderate (36.7%) D. Rapid (25.25%) E. Very Rapid (22.7%)
Yr 2: A. Very Slowly (5.6%) B. Slowly (12.3%) C. Moderate (41.2%) D. Rapid (20.6%) E. Very Rapid (18.6%)

18. I enjoy writing.

Yr 1: A. Strongly Dis. (4.7%) B. Disagree (11.3%) C. Undecided (17.3%) D. Agree (46.1%) E. Strongly Agr. (18.0%)
Yr 2: A. Strongly Dis. (5.4%) B. Disagree (9.0%) C. Undecided (17.9%) D. Agree (49.0%) E. Strongly Agr. (16.2%)

19. I enjoy speaking in public (outside of classroom teaching).

Yr 1: A. Strongly Dis. (9.3%) B. Disagree (21.4%) C. Undecided (18.6%) D. Agree (35.3%) E. Strongly Agr. (10.1%)
Yr 2: A. Strongly Dis. (9.6%) B. Disagree (26.5%) C. Undecided (19.0%) D. Agree (33.4%) E. Strongly Agr. (7.6%)

20. I enjoy using computers.

Yr 1: A. Strongly Dis. (4.3%) B. Disagree (1.8%) C. Undecided (8.3%) D. Agree (40.8%) E. Strongly Agr. (43.0%)
Yr 2: A. Strongly Dis. (2.8%) B. Disagree (2.1%) C. Undecided (11.6%) D. Agree (49.8%) E. Strongly Agr. (30.9%)

21. Computers are very important to the future of education.

Yr 1: A. Strongly Dis. (5.2%) B. Disagree (2%) C. Undecided (1.1%) D. Agree (18.3%) E. Strongly Agr. (73.5%)
Yr 2: A. Strongly Dis. (3.9%) B. Disagree (.3%) C. Undecided (2.7%) D. Agree (23.8%) E. Strongly Agr. (67.1%)

We would like you to rate your current proficiency in using the following computer-related technologies. Using the following scale, please mark the bubble that best describes your proficiency in using each item.

- A. Unfamiliar - do not know what this item is
- B. Low - little or no skill
- C. Medium - some proficiency, could use some training
- D. High - very proficient, use regularly

		<u>Unfamiliar</u>	<u>Low</u>	<u>Med</u>	<u>High</u>
22. Problem solving / Higher thinking	Yr 1:	A (16.9%)	B (19.4%)	C (40.2%)	D (18.1%)
	Yr 2:	A (19.7%)	B (24.4%)	C (38.6%)	D (11.8%)
23. Word-processing	Yr 1:	A (2.8%)	B (9.0%)	C (36.2%)	D (44.7%)
	Yr 2:	A (4.1%)	B (15.1%)	C (39.7%)	D (35.4%)
24. Databases and/or Spreadsheets	Yr 1:	A (15.3%)	B (31.6%)	C (30.4%)	D (16.3%)
	Yr 2:	A (20.6%)	B (40.7%)	C (27.2%)	D (8.1%)
25. Programming (e.g. Logo, Basic, etc.)	Yr 1:	A (47.2%)	B (36.4%)	C (9.9%)	D (4.2%)
	Yr 2:	A (54.4%)	B (34.4%)	C (6.7%)	D (1.5%)
26. Hypermedia (i.e. Hypercard, etc.)	Yr 1:	A (47.4%)	B (31.7%)	C (14.2%)	D (4.1%)
	Yr 2:	A (59.0%)	B (28.6%)	C (7.9%)	D (1.4%)
27. CD ROM	Yr 1:	A (21.8%)	B (36.3%)	C (26.4%)	D (12.1%)
	Yr 2:	A (23.0%)	B (37.9%)	C (26.3%)	D (7.6%)
28. Video Disc	Yr 1:	A (35.8%)	B (35.7%)	C (18.7%)	D (7.0%)
	Yr 2:	A (42.4%)	B (35.6%)	C (14.1%)	D (3.3%)
29. Telecommunications	Yr 1:	A (30.7%)	B (37.1%)	C (23.5%)	D (5.7%)
	Yr 2:	A (41.9%)	B (38.7%)	C (12.5%)	D (2.4%)

30. Narrative Questions:

To represent responses on the narrative questions, 100 random responses were organized into categories of similar response for each of year 1 and year 2.

"How do you plan to use Internet either for yourself or your students?"

For Year 1:

For year 1, 48% of the complete sample of 2643 respondents left this question blank or said "I don't know". Of those who responded, the following were the types of responses identified, listed in order of frequency:

- 1) For information gathering - as a general response (29%)
- 2) To communicate with other professionals in my field, share ideas, and link with other teachers (11%)
- 3) For electronic mail (10%)
- 4) To link students with other Nebraska schools to share information and ideas (10%)
- 5) As pen pals in international, national, and statewide areas (8%)
- 6) To contact people who speak a foreign language, such as German, Spanish, French, and Japanese (8%)
- 7) For library research, library science research, access to college libraries, and the library of congress (5%)
- 8) To access career and post secondary education information (4%)
- 9) To access information on current events (3%)
- 10) To access NASA and Space Link (3%)
- 11) To facilitate class projects (2%)
- 12) To connect to places we study (2%)
- 13) To teach students to use the Internet (2%)
- 14) To communicate with visual artists, and museums (1%)
- 15) For problem solving across the state (1%)
- 16) To motivate at risk and non reading students (1%)
- 17) To facilitate a mentor situation with highly gifted students (1%)

For Year 2:

For year 2, 53% of the complete sample of 1133 respondents (representing the first 6 months of year 2) left this question blank or said "I don't know". Of those who responded, the following were the types of responses identified, listed in order of frequency:

- 1) For information gathering - as a general response (48%)
- 2) For electronic mail (20%)
- 3) To communicate with other professionals in my field, share ideas, and link with other teachers (9%)
- 4) To facilitate class projects (8%)
- 5) To link students with other schools to share information and ideas (3%)
- 6) For library research (3%)
- 7) To teach students to use the Internet (3%)
- 8) To contact people who speak a foreign language (2%)
- 9) For written language proficiency (2%)
- 10) For art and gifted students (1%)
- 11) Genealogy (1%)

Some of the above categories could be collapsed, but were instead left as separate categories for clarity in specificity of use. The two most common general uses for each year, when collapsing categories more completely, were the following:

For Year 1:

Information gathering (43%, responses 1, 7, 8, 9, 10)
Communication (48%, responses 2, 3, 4, 5, 6, 14)

For Year 2:

Information gathering (53%, responses 1, 6)
Communication (37%, responses 2, 3, 5, 8)

In responding to the second narrative question, which identified the teachers knowledge of other teachers who might be using the Internet in innovative ways in the classroom, a large number of teachers for each year left this question blank. The open ended question asked:

"Do you know of anyone we should contact that is using Internet in innovative ways in their classroom?"

The following were the number of the respondents for each year who left this question blank. It is important to remember that the information reported for year 2 really represents only the first six months of year 2, since this is the 18 month reporting period of the project.

Year 1: 94 % of the 2643 respondents left the question blank
Year 2: 97 % of the 1133 respondents left the question blank

Of those teachers who responded, most responded with both the name and school, as requested by the question. Using this list of names taken from the surveys, innovative users were contacted either by electronic mail or by phone interview to begin to identify and document the innovative uses of the Internet by teachers in the state. Results of these interviews are included in a later section in this report.

Post-Training Survey Analysis:

In November 1994, a questionnaire was sent by electronic mail to earlier survey respondents. The purposes of this instrument was 1) to identify early trends in the use of Internet by Nebraska educators, and 2) to pilot the post-survey instrument. In April 1995, the refined survey was sent by electronic mail to all pre-training survey respondents, with 517 (13.6%) responses returned. Obviously, these respondents were Internet users, since they responded over the Internet.

A follow-up paper copy of the survey was then sent via US. Mail, to 400 randomly selected non-respondents, with 142 (35.5%) of these surveys completed and returned. The data from these two surveys will be reported in the following section, along with Implications from the data analysis. Related graphs are included in Appendix E. Responses from the e-mail survey and the ground mail survey will be reported separately because of the different methods of receiving the data.

		1) What response best describes your current position?
<u>Elec</u>	<u>US Mail</u>	(Select one)
70%	68%	A. Teacher
10%	5%	B. Administrator
2%	4%	C. Technology Coordinator (no teaching)
11%	18%	D. Media Specialist
8%	5%	E. Support Staff
		2) Approximately how many months have you used the Internet?
<u>Elec</u>	<u>US Mail</u>	
24%	13%	A. 0-3
22%	16%	B. 3-6
19%	26%	C. 6-9
14%	28%	D. 9-12
21%	17%	E. 12 or more
		3) How is your school building connected to the Internet?
<u>Elec</u>	<u>US Mail</u>	
41%	49%	A. Modem
40%	31%	B. Direct Connection
14%	10%	C. Both Modem and Direct Connections
6%	10%	D. School is Not Connected

<u>Elec</u>	<u>US Mail</u>	4) How many school Internet-connected computers are available to you personally at least once per day?
6%	18%	A. 0
43%	44%	B. 1
13%	12%	C. 2
4%	2%	D. 3
35%	23%	E. 4 or more

<u>Elec</u>	<u>US Mail</u>	5) Approximately how many STUDENTS are in your building?
11%	15%	A. Less than 100
14%	21%	B. 100-199
33%	29%	C. 200-399
20%	16%	D. 400-799
23%	19%	E. 800 or more

<u>Elec</u>	<u>US Mail</u>	6) How many Internet-connected computers are available to STUDENTS in your building?
28%	34%	A. 0
20%	22%	B. 1
16%	17%	C. 2-5
5%	4%	D. 5-10
31%	23%	E. More than 10

<u>Elec</u>	<u>US Mail</u>	7) Of the Internet-connected computers, how many are available to your STUDENTS at least twice per week?
33%	41%	A. 0
22%	26%	B. 1
16%	15%	C. 2-5
4%	2%	D. 5-10
25%	17%	E. More than 10

<u>Elec</u>	<u>US Mail</u>	8) Have you had your STUDENTS use the Internet?
43%	32%	A. Yes
57%	67%	B. No

<u>Elec</u>	<u>US Mail</u>	9) If not, why not? (select the most important reason)
30%	42%	A. An Internet-connected computer is not available
7%	2%	B. The Internet system is too difficult to use
4%	1%	C. I have no one to answer my questions
9%	5%	D. The Internet is of little value in my classes
51%	49%	E. Other (please specify) --

<u>Elec</u>	<u>US Mail</u>	10) Rate your principal's support of the use of Internet with your students?
33%	26%	A. Strongly Encourages
35%	30%	B. Encourages
28%	41%	C. Neutral
3%	3%	D. Discourages
1%	1%	E. Strongly Discourages
2.03	2.24	(mean)

<u>Elec</u>	<u>US Mail</u>	11) If you had questions about using the Internet, who would you ask for help? (Please select the most likely person)
22%	20%	A. Another Teacher
37%	33%	B. Technology Coordinator
12%	14%	C. Media Specialist
1%	1%	D. Student
28%	32%	E. ESU Personnel

THIS QUESTION ASKED ONLY ON THE GROUND MAIL FORM

<u>Elec</u>	<u>US Mail</u>
NA	66%
NA	10%
NA	4%
NA	5%
NA	15%

12) How long ago did you last use the Internet?

- A. < 1 month
- B. 1-2 months
- C. 3-4 months
- D. 5-6 months
- E. over 6 months

<u>Elec</u>	<u>US Mail</u>
57%	25%
21%	19%
7%	7%
6%	13%
11%	36%
1.93	3.17

13) Approximately how often do YOU personally use the Internet at school?

- A. Once per day
 - B. Once per week
 - C. Twice per month
 - D. Once per month
 - E. Never
- (mean)

<u>Elec</u>	<u>US Mail</u>
28%	9%
20%	7%
3%	6%
4%	2%
45%	76%
3.19	4.28

14) Approximately how often do YOU personally use the Internet at home?

- A. Once per day
 - B. Once per week
 - C. Twice per month
 - D. Once per month
 - E. Never
- (mean)

<u>Elec</u>	<u>US Mail</u>
63%	26%
26%	20%
5%	8%
4%	14%
2%	33%
1.56	3.06

15) Approximately how often do YOU use e-mail?

- A. Once per day
 - B. Once per week
 - C. Twice per month
 - D. Once per month
 - E. Never
- (mean)

<u>Elec</u>	<u>US Mail</u>
19%	8%
27%	13%
13%	9%
19%	22%
22%	49%
2.98	3.91

16) Approximately how often do YOU use telnet?

- A. Once per day
 - B. Once per week
 - C. Twice per month
 - D. Once per month
 - E. Never
- (mean)

<u>Elec</u>	<u>US Mail</u>
9%	4%
28%	13%
13%	14%
25%	16%
25%	53%
3.30	4.02

17) Approximately how often do YOU use gopher?

- A. Once per day
 - B. Once per week
 - C. Twice per month
 - D. Once per month
 - E. Never
- (mean)

<u>Elec</u>	<u>US Mail</u>
4%	1%
15%	4%
11%	8%
16%	12%
50%	76%
3.98	4.57

18) Approximately how often do YOU use ftp?

- A. Once per day
 - B. Once per week
 - C. Twice per month
 - D. Once per month
 - E. Never
- (mean)

<u>Elec</u>	<u>US Mail</u>	19) Approximately how often do YOU use World Wide Web? (i.e.-Mosaic, Netscape, Lynx, MacWeb)
15%	6%	A. Once per day
24%	12%	B. Once per week
10%	5%	C. Twice per month
14%	16%	D. Once per month
35%	61%	E. Never
3.31	4.15	(mean)

<u>Elec</u>	<u>US Mail</u>	20) Approximately how often do you have your STUDENTS use e-mail?
3%	2%	A. Once per day
9%	5%	B. Once per week
5%	3%	C. Twice per month
9%	16%	D. Once per month
74%	61%	E. Never
4.40	4.15	(mean)

<u>Elec</u>	<u>US Mail</u>	21) Approximately how often do you have your STUDENTS use telnet?
3%	2%	A. Once per day
5%	4%	B. Once per week
4%	1%	C. Twice per month
11%	7%	D. Once per month
77%	87%	E. Never
4.54	4.71	(mean)

<u>Elec</u>	<u>US Mail</u>	22) Approximately how often do you have your STUDENTS use gopher?
3%	2%	A. Once per day
6%	2%	B. Once per week
4%	4%	C. Twice per month
11%	8%	D. Once per month
76%	84%	E. Never
4.52	4.69	(mean)

<u>Elec</u>	<u>US Mail</u>	23) Approximately how often do you have your STUDENTS use ftp?
1%	2%	A. Once per day
1%	0%	B. Once per week
2%	2%	C. Twice per month
10%	4%	D. Once per month
87%	92%	E. Never
4.80	4.86	(mean)

<u>Elec</u>	<u>US Mail</u>	24) Approximately how often do you have your STUDENTS use the World Wide Web? (i.e.-Mosaic, Netscape, Lynx, MacWeb)
4%	2%	A. Once per day
6%	5%	B. Once per week
5%	2%	C. Twice per month
9%	7%	D. Once per month
77%	84%	E. Never
4.47	4.64	(mean)

THIS QUESTION ASKED ONLY ON THE GROUND MAIL FORM**25) Do you plan on using the Internet much more within the next 6 months?**

<u>Elec</u>	<u>US Mail</u>
NA	80%
NA	20%

- A. Yes
B. No

*Question 26 is a narrative question summarized later...***THIS QUESTION ASKED ONLY ON THE GROUND MAIL FORM****27) Do you plan on having your STUDENTS use the Internet significantly more within the next 6 months?**

<u>Elec</u>	<u>US Mail</u>
NA	60%
NA	40%

- A. Yes
B. No

*Question 28 is a narrative question summarized later...***29) In your opinion, which Internet application listed in the previous questions has the most potential for you as a TEACHER? (please select only one response)**

<u>Elec</u>	<u>US Mail</u>
34%	41%
5%	7%
10%	14%
4%	2%
47%	37%

- A. E-Mail
B. Telnet
C. Gopher
D. File Transfer Protocol (FTP)
E. World Wide Web (i.e.-Mosaic, Netscape, Lynx, MacWeb)

30) In your opinion, which Internet application listed in the previous questions has the most potential for your STUDENTS? (please select only one response)

<u>Elec</u>	<u>US Mail</u>
12%	11%
7%	11%
19%	23%
3%	3%
58%	52%

- A. E-Mail
B. Telnet
C. Gopher
D. File Transfer Protocol (FTP)
E. World Wide Web (i.e.-Mosaic, Netscape, Lynx, MacWeb)

31) How do you plan to use the Internet for yourself in the future? (Select the most important use)

<u>Elec</u>	<u>US Mail</u>
0%	4%
51%	36%
38%	51%
10%	8%

- A. I don't plan on using the Internet
B. For communication (e-mail, conferencing, etc.)
C. For information gathering
D. For information sharing

32) How will your students use Internet in the future? (Select the most important use)

<u>Elec</u>	<u>US Mail</u>
9%	6%
12%	12%
69%	71%
10%	11%

- A. I don't plan on having my students use the Internet
B. For communication (e-mail, conferencing, etc.)
C. For information gathering
D. For information sharing

33) Do you have a World Wide Web Server in your building?

<u>Elec</u>	<u>US Mail</u>
36	33
49	48
15	19

- A. Yes
B. No
C. No, but we are planning on setting one up within 6 months

34) How often per month do you use cooperative learning groups in your classroom? (leave blank if question is not applicable to your situation)

<u>Elec</u>	<u>US Mail</u>	
12%	9%	A. 0
25%	24%	B. 1-2
25%	27%	C. 3-5
17%	17%	D. 6-8
21%	23%	E. >8
3.12	3.22	(mean)

35) How often per month do you have students develop projects ? (leave blank if this question is not applicable to your situation)

<u>Elec</u>	<u>US Mail</u>	
18%	12%	A. 0
27%	55%	B. 1-2
17%	20%	C. 3-5
4%	9%	D. 6-8
5%	4%	E. >8
2.23	2.38	(mean)

36) How often per month do you lecture or demonstrate to your students ? (leave blank if this question is not applicable to your situation)

<u>Elec</u>	<u>US Mail</u>	
3%	3%	A. 0
17%	7%	B. 1-2
16%	19%	C. 3-5
19%	20%	D. 6-8
46%	49%	E. >8
3.89	4.16	(mean)

37) How often per month do you have students use the computer? (leave blank if this question is not applicable to your situation)

<u>Elec</u>	<u>US Mail</u>	
10%	6%	A. 0
17%	18%	B. 1-2
15%	16%	C. 3-5
11%	11%	D. 6-8
48%	49%	E. >8
3.70	3.77	(mean)

38) How often per month do you have students research (on their own) a topic? (leave blank if the question is not applicable to your situation)

<u>Elec</u>	<u>US Mail</u>	
22%	11%	A. 0
50%	58%	B. 1-2
13%	11%	C. 3-5
3%	8%	D. 6-8
11%	13%	E. >8
2.32	2.55	(mean)

39) How often per month do you give students assignments that involve writing (i.e. process writing)? (leave blank if question not applicable)

<u>Elec</u>	<u>US Mail</u>	
7%	3%	A. 0
27%	27%	B. 1-2
23%	21%	C. 3-5
14%	10%	D. 6-8
31%	39%	E. >8
3.36	3.55	(mean)

40) How often per month do you have students use the library resources at your school? (leave blank if this question is not applicable to your situation)

<u>Elec</u>	<u>US Mail</u>
13%	7%
39%	38%
23%	22%
9%	10%
16%	24%
2.77	3.06

- A. 0
B. 1-2
C. 3-5
D. 6-8
E. >8
(mean)

<u>Elec</u>	<u>US Mail</u>	41) I enjoy writing.
34%	25%	A. Strongly Agree
43%	46%	B. Agree
13%	18%	C. Undecided
10%	11%	D. Disagree
0%	0%	E. Strongly Disagree
1.99	2.14	(mean)

<u>Elec</u>	<u>US Mail</u>	42) I enjoy speaking in public (outside of classroom teaching).
17%	14%	A. Strongly Agree
41%	34%	B. Agree
19%	24%	C. Undecided
18%	23%	D. Disagree
5%	6%	E. Strongly Disagree
2.53	2.73	(mean)

<u>Elec</u>	<u>US Mail</u>	43) I enjoy using computers.
73%	43%	A. Strongly Agree
25%	49%	B. Agree
2%	7%	C. Undecided
0%	1%	D. Disagree
0%	0%	E. Strongly Disagree
1.30	1.67	(mean)

<u>Elec</u>	<u>US Mail</u>	44) Computers are <u>very</u> important to the future of education.
87%	71%	A. Strongly Agree
12%	26%	B. Agree
1%	4%	C. Undecided
0%	0%	D. Disagree
0%	0%	E. Strongly Disagree
1.13	1.33	(mean)

The survey also included two open-ended questions related to suggestions for increasing personal and student use. These questions were analyzed together, due to the similarity and general overlap of the responses. The questions were:

26) "What needs to change if you personally are going to use the Internet significantly more in the future?"

and

28) "What needs to change if you are going to have your students use the Internet much more in the future?"

Teachers made several common suggestions in response to both of these questions. The most prevalent suggestion was that more training was needed for both teachers and students, since "we are still both learning the basics" (20%). Typically

this follow-up training suggestion focused on "curricular training" for teachers", and would identify specific disciplines, such as music or mathematics. Another 15% of the respondents wrote that individual student accounts are desired, but that they are not yet available, primarily because student accounts have yet not been approved by the district. Some teachers offering this suggestion reported that they sometimes circumvent this problem by allowing their students to use their own classroom teacher's account. However, these same teachers typically made statements that said that they were uncomfortable with this practice, due to potential student misuse. As stated by one respondent, "Although Internet is available to my students through my account, I must log them in. The school board at this time has chosen not to allow individual student accounts. They are afraid of what students might access on the net."

Another 15% of the teacher respondents reported that current software or hardware constraints, especially related to modem based connectivity, prevents them from effectively using the internet in their classrooms, either by themselves or by their students. As one teacher stated, "my classroom of fourth graders is not directly connected to the internet. This makes it currently unrealistic for me to use it. Hopefully my room will be connected soon". Another less common suggestion related to the need for additional classroom planning time (8%), including time for teachers to explore on their own during the school day. Only a relatively few teachers (4%) wrote that they were currently in a curricular area that they believed did not lend itself well to Internet use.

Server Data Analysis

Estimates related to the general support offered at each of the ESU servers are requested periodically from each of the Internet coordinators by phone or electronic mail (see Appendix F). Data summaries from these periodic contacts are being reported as state totals, rather than individual ESU totals. The information requested establishes statewide estimates related to the total number of teachers using the system, the modem and direct connect access available to users, and evolving support plans. The following cumulative statewide totals were found through feedback from the Internet coordinators at each server site and are current as of June 1, 1995. It is important to remember that the year 2 data is cumulative for only the first six months of year 2 since this is the 18 month reporting period. It will be updated for the full year at the 24 month reporting period.

Estimates:

	Year 1	Year 2
Number of statewide Internet users supported by the ESU's:	10,200	16,468
Number of "direct connected" schools:	186	238
Number of planned additional "direct connects" in the next year:	170	219
Number of individuals going through at least initial ESU training on the Internet:	5,800	9,537

The Internet Coordinators for the ESU's also report some significant "barriers" or "issues" that they are facing as they move forward in supporting Internet Integration into their organizations school districts. These can be summarized below:

Barrier/Issue 1: There currently is a wide range of connectivity in the schools.

The wide range of connectivity existing currently in Nebraska schools makes it challenging to train all teachers in the same training sessions. Most schools still have only modem access, while others have already been able to facilitate a "direct connection". Limited phone lines in smaller schools is making even initial modem access a challenge in these areas. This range of access will

probably continue to be a problem until all or most of the schools attain a direct connection environment.

Barrier/Issue 2: Time available for "freeing" up teachers for training sessions is limited.

Some school districts are having difficulty freeing up their teachers during the day, so a significant number of training sessions, at some sites, have had to be offered outside school hours. This makes it difficult to provide the teachers with the preferred "extended" training session.

Barrier/Issue 3: The issuing of student accounts involves special access concerns.

With the issuing of student accounts for direct student access to the Internet, or within the direct connect environment of the World Wide Web, it is currently impossible to effectively limit access to various sites with offensive material by machine based or technical solution. Many schools and ESU's are appropriately taking a formalized "adult supervision" approach to the problem, where the students, teachers, and parents share in the responsibility of ensuring the appropriate use of the Internet.

Barrier/Issue 4: Limited resources for technical and curricular support exist.

The Educational Service Units are currently "stretched very thin" in their ongoing support and resources related to this state-wide endeavor. Much of the responsibility for facilitating individual school access and ongoing curricular support must rest with the specific school and community. The cooperation between ESU's, school districts, and the community has so far been exceptional.

The Nebraska Educational Service Units, and the school districts that they are working with, have been remarkably cooperative and "innovative" in their approaches to these very difficult "barriers" and "issues". Often, they are leading the country with addressing these particular issues and barriers. It is apparent that continued cooperation between all Nebraska institutions, under the leadership of the Educational Service Units, is **critical** to the continued progress of the Educational Service Units in bringing the Internet into Nebraska's K-12 classrooms.

Innovative Use Summary: Teachers and Projects

Another component of the evaluation process is to examine some of the innovative uses of the Internet in K-12 classrooms in Nebraska, both by teachers and through education related projects. The general observations, summarized below, consist of combining and interpreting the following sources of data:

1) Electronic follow-up surveys

These surveys were electronically mailed to teachers identified as "innovative users" by a colleague on the Pre-training Survey instrument. A copy of the questions asked by this "Innovative User" survey sent by electronic mail is available in Appendix G.

2) Phone Interviews

Phone calls were conducted with selected "innovative users" identified from above, or referenced in traditional forums (conferences, etc.) by other colleagues in the field. The phone interview protocol is included in Appendix H.

3) On-site visitations

For selected "innovative uses" where there might be interesting things to observe in the classroom, a "field observer" was sent to the classroom to observe Internet related activities with students. These visits were generally "open ended" to permit a teacher or project leader to share whatever they desired, and typically focused on observations related to student and teacher activities, curriculum integration, and the "unique" characteristics related to the classroom environment.

Observation and interview tasks were divided between a group of three professors and three graduate assistants. These activities will continue periodically through the duration of the five year project. After a review of the information from each of the above data sources for the 18 month reporting period, the following summary observations from both classrooms and projects, seemed noteworthy at this time.

Summary Classroom Observation 1: Teachers identified as "innovative users" by colleagues, often involved students directly in the use of the Internet.

Many of the teachers who seemed to be doing innovative things involved their students in even the routine Internet related tasks, such as keyboarding and basic retrieval. For example, a fifth grade teacher had his students search NASA's database for pictures of the moon, and similarly, a second grade teacher had her students type the mail messages to a 12th grade calculus class. The direct involvement of students seemed to be a consistent trend in many of the classrooms observed and in the teacher interviews conducted.

Summary Classroom Observation 2: Teachers identified as "innovative users" by colleagues, often had students "publish" as well as "retrieve" information on the Internet.

Many of the classroom projects commonly included the student sharing of information back over the Internet, as well as just retrieving information, often by electronic mail. For instance, one class was communicating electronically with a university genetics professor, another was exchanging information with a NASA engineer, and a high school class was asking questions of a famous artist.

Summary Classroom Observation 3: Most teachers identified "student motivation" as an important reason for pursuing Internet related activities.

Almost all the teachers visited in classrooms, and interviewed by phone, mentioned the enthusiasm of the students. One well established high school project which involved the study of Mars, reported significant increases in overall science course enrollment. As another example, an elementary teacher who had students communicating regularly with students in other parts of the U.S., as well as Russia, Finland, and Australia, reported that students immediately wanted to "organize" their information into charts related to cultural differences, leading to highly motivated class discussions of charting and graphing.

Summary Classroom Observation 4: On-site equipment "frustrations", primarily related to current modem access, seem to currently be a significant instructional problem.

Many of the teachers visited in classrooms, and interviewed, identified on-site equipment access as their biggest frustration. Much of the problem related to limited modem access, with often only one or two phone lines available for the school. Several teachers reported the need to "string" a phone line down the hall when using the Internet, and one teacher reported that she currently had to "disable" the Principal's phone when using the Internet. All of these teachers reported that they eagerly await "direct connect" access within their particular building or classroom.

Summary Classroom Observation 5: Strong student keyboarding skills were often mentioned as a necessity, especially by lower grade level teachers.

Many of the teachers at the elementary level mentioned the need for good student keyboarding skills. Several of the teachers identified this as a very limiting problem for some students, and one even made the point that students who did not have these skills tended to "self-select" themselves out of computer and Internet related activities. Many of the teachers reported that they had to take the time to review at least a few keyboarding fundamentals with their class. Another teacher made the point that since all teachers are now considered "reading teachers" with limited training in this area, perhaps all teachers should be considered "keyboarding teachers" and also receive training in this area.

Summary Classroom Observation 6: Interdisciplinary curriculum connections seemed to be very common.

Most of the classroom activities observed, and the projects described, had substantial interdisciplinary components. For instance, a "Romeo and Juliet" project, involved rewriting the

classic play in English class with follow-up implications discussed in Social Studies class. Another example is an ongoing multi-district art and Internet project, which involves the blending of art into other disciplines such as science and mathematics. It was apparent that integration between curricular areas seemed very natural in the observed innovative uses of the Internet, and often "blurred" discipline lines.

Summary Classroom Observation 7: Student "research" within the observed classrooms appears to be at a considerably higher level than is typical.

One of the more interesting observations is that student research within the observed classrooms, and in the activities described by teachers, appears to be considerably more involved than is traditional. As one teacher reported, students want to "define the problem" more carefully, and then "ask" to investigate it. It was also remarkable that the word "research" was used so frequently and naturally in the Internet related classrooms, and by teachers involved in the classroom activities.

Summary Classroom Observation 8: Many non-traditional classroom resources were being accessed.

Access to non-traditional classroom resources was very common in many of the innovative classrooms observed and described. For example, a high school Physics class was accessing ray tracing programs from the National Education Supercomputer Center. Other examples included an elementary class downloading weather images from the National Weather Archives, second graders sharing mathematics ideas with an officer from the U.S. Air Force, and a junior high class locating government information from the National Archives in Washington. One elementary class even communicated electronically with Janet Reno's office of the United States Attorney General.

Many district and statewide Internet projects are also beginning, and these general summary observations were apparent during this 18 month reporting period.

Summary Project Observation 1: State Lottery Funding is becoming a real "catalyst" to larger scale district supported projects and innovation planning.

A significant portion of the more ambitious projects starting in school districts is related to either a funded lottery grant, or an eventual lottery grant proposal. Many of these projects involve districts attempting to carefully integrate computer and Internet technology into the curriculum. Often the related Lottery Grant proposals are very extensive, and represent considerable planning by a district, which is very useful whether the project is eventually funded or not. It appears that to many innovative teachers and districts, the possibility of Lottery Grant money is something that helps them "envision" their project ideas on a larger scale.

Summary Project Observation 2: World Wide Web access is becoming increasingly important to state-wide Internet related projects.

Most of the large scale and statewide focused projects involving the Internet are depending on efficient World Wide Web access for the operation and dissemination of project activities. For example, the Nebraska Mathematics and Science Initiative has established a "Regional Coalition" Web page for the sharing of information by and among the seven state regional coalitions. Another example is the Nebraska Web Project, facilitated by U.S. West and the Nebraska Educational Service Units, which is planning to connect teacher developed World Wide Web pages related to the communities, recreation, environment, and economic systems of Nebraska. Efficient and direct connect access to the World Wide Web across Nebraska, is critical for the success of these projects.

Summary Project Observation 3: There is considerable corporate interest in Nebraska based Internet projects.

The corporate interest in Internet based education activities in Nebraska seems to be substantial and growing. In particular, companies such as U.S. West, with their Model Schools program, and organizations such as the Applied Information Management Institute, with their education related initiatives, are beginning to work more directly in facilitating education and telecommunications related projects within the state. The emerging corporate and education related cooperation seems particularly effective in providing additional credibility to many of the educational innovations being undertaken by teachers and districts.

Summary Project Observation 4: There is considerable community interest in Nebraska based Internet projects.

Similar to the corporate participation in Internet related education projects, general community activity is also increasing. This is apparent by many of the new "freenets" and "community bulletin boards" emerging in communities across the state. For example, Great Plains Communications is establishing community bulletin board services in many small towns in western Nebraska, and the University of Nebraska at Omaha is establishing a citywide FreeNet in Omaha. This interconnectivity between community and education would eventually help support many of the education related activities and projects currently planned, such as the education outreach activities by the Nebraska Game and Parks Association

It was generally apparent from these field observations, that Nebraska is truly becoming a "leader" in innovation related to the use of the Internet in education. Eventually, this "Innovative Use" component of the evaluation, along with summaries from the other components, will be accessible by use of a World Wide Web site, so that all teachers in Nebraska (and the country) can access information related to innovative uses. This should demonstrate that the evaluation project will also be a useful tool in disseminating innovative uses of the Internet.

External Grant Progress

The state resources available for the evaluation project, as funded by the Nebraska Educational Service Units, are minimal, and thus initial evaluation activities have also included the submission of proposals to help facilitate a comprehensive and statewide evaluation process. The submission of additional proposals has been for the most part successful, and include the following grants now underway that contribute in some partial way to the overall evaluation process summarized in this report.

Federal Evaluation Grant

In December of 1993, a grant proposal was submitted to the U.S. Department of Education (for \$87,358), entitled "An Appraisal of the Impact of Statewide Internet Implementation on Nebraska K-12 Education". This proposal was funded, and is running, from September 1, 1994 to September 1, 1995. This funding is helping facilitate an expanded evaluation for one year, including enhanced survey, interview, and on-line data collection activities, as well as actual classroom visits and observations. The formal project directors are Dr. Neal Topp and Dr. Neal Grandgenett.

Project TEAM - Internet

The focus of this grant is to train teacher leaders in the educational uses of the Internet, as well as help document some of the innovative uses of the Internet by teachers. The project was funded by the Helena Foundation for \$99,700, and will run through 1996. It will assist in the development of the World Wide Web page related to the evaluation project, as well as help identify innovative uses of the Internet across the state. The formal project directors are Dr. Neal Grandgenett and Dr. Neal Topp.

Excellence in Education School District Grants

Through proposals to the Nebraska Excellence in Education grants, which are funded through Nebraska Lottery revenue, many school districts are asking to become "model sites" related to Internet, and computing technology in general. This statewide evaluation project is consulting with many of these schools and districts to develop a formal "data collection and analysis" process at their specific site. Such "in-depth" case studies will contribute to the overall state-wide evaluation, and facilitate some careful observations of how a school or school district effectively integrates the Internet into the curriculum.

The continued funding of such proposals will be of critical assistance in implementing an effective and long range analysis of Nebraska's K-12 uses of the

Internet. Each grant plays a role in providing the component resources to examine one or more perspectives related to the evolving use of the Internet in Nebraska schools and classrooms.

Progress Compared to Other States

The evaluation project is also examining what is happening in other states in the United States, primarily to provide comparison information for the Nebraska Evaluation Project, and to draw upon the expertise of out of state colleagues during the evaluation process. Research is starting to emerge related to statewide efforts in telecommunications and technology. The Office of Technology Assessment, of the United States Congress, recently published a 1995 report which summarized educational technology related activities from each of the 50 states in the United States. Within that report, a total of 39 states now report having some type of support system for K-12 instructional telecomputing at least partially operational, and nine of the remaining eleven states were in the planning stages (p. 114). These networks and the support offered vary considerably, and the most of the states are still heavily dependent upon "modem" based connectivity. Nebraska is comparatively strong in telecommunications integration, as well as in general educational technology access, as represented by having the fifth lowest computers to student ratio (10.4) out of all 50 states (Office of Technology Assessment, 1995, 101).

The pace of national change is rapidly increasing, and some other states, along with Nebraska, have had considerable early success in building education related networks. In particular, these early leaders include states such as Texas, Florida, and Virginia. A few states, such as Mississippi, are only now beginning to consider and develop their formal plans for building a statewide network, but are now well focused on the need to do so. Based on the progress documented in this report, and the state officials contacted in phone interviews, Nebraska appears to be making significant progress relative to the other states, and can be considered a real leader. In particular, Nebraska has shown substantial leadership in five specific aspects related to K-12 integration of the Internet:

1) Funding

Nebraska has been successful in providing tax based funding for providing education related Internet connectivity.

2) Teacher Training

Nebraska is one of the only states to provide for comprehensive teacher training related to the Internet.

3) Model School Environments

Nebraska has been successful in accessing funding for the development of model school environments related to the Internet, such as with the U.S. West Model Schools Projects, and the Nebraska Lottery supported Excellence in Education grant activities.

4) Direct Connections

Nebraska has been a leader in emphasizing "direct connect" technology in its statewide connectivity plans and activities. Many states have built their network based upon modem connections, often including "800" support phone lines. Some of these states are now having considerable difficulty in making such networks cost effective, and in making the necessary transition to a direct connect environment.

5) Evaluation

Although other states and researchers are examining the use of the Internet in education, Nebraska appears to be the only state with a comprehensive and formalized evaluation plan being fully implemented across the state.

Evaluation Implications

Each of the teacher survey, server, and innovative use data sources were examined for related implications, with cross-referencing between sources conducted when appropriate. The analysis techniques used are primarily descriptive statistical procedures, with expanded correlational procedures between sources planned for the next 24 month reporting period. Although it is still early in the five year evaluation process, several suggestions and implications were apparent at this 18 month reporting period.

These suggestions and implications are divided into smaller sections related to the primary data source suggesting the implications. These sections include a section on implications from the pre-training survey data, implications from the post training survey data, implications from the survey data, implications from the innovative uses of teachers and projects, and some general project implications. The section related to implications from the post survey data is further divided into parts which identify general categories of implications. These include post survey implications related to educator use, post survey implications related to student use, and post survey implications related to future plans.

Implications from the pre-training survey data:

A fairly wide range of survey responses from the pre-training instrument has been accumulated (3776 surveys), representing all Nebraska ESUs, in order to provide an evolving "baseline" on Nebraska teachers who enter the ESU training process. The following implications can be identified from the pre-training survey analysis.

1) Many teachers report knowing very little about telecommunications before entering the Internet related training.

Responses to the Internet and telecommunications related questions suggest that teachers often know very little about the Internet before beginning the training process. This is particularly illustrated by the high percentage of teachers who identified telecommunications as either "unfamiliar" or as having "little or no skill" in the area. This result is most prevalent in the data recently collected for the first six months of the year 2 reporting period. It appears the second year of training is involving a higher percentage of teachers who consider themselves as currently unfamiliar or low in proficiency related to the Internet and telecommunications. This suggests that the training sessions are now beginning to "reach" a higher percentage of teachers without any current background or understanding of the Internet. See Figure 1 on the next page.

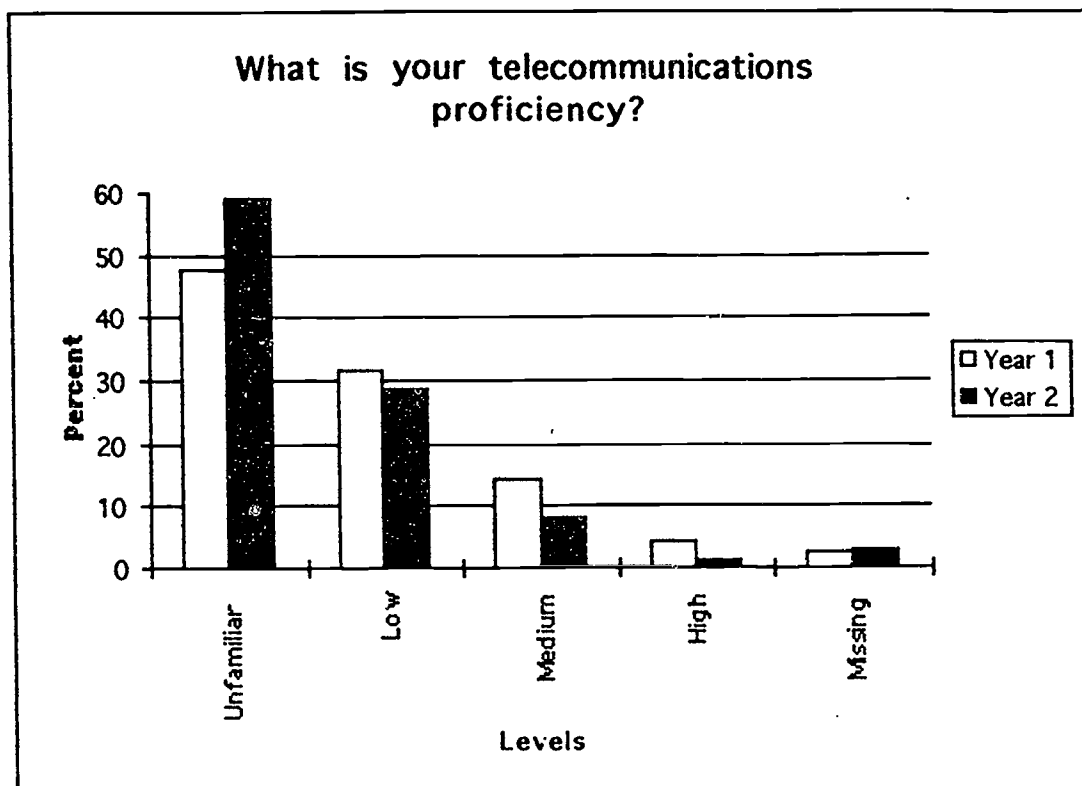


Figure 1.

Such a result suggests that the initial training workshops will need to continue to include, and perhaps even enhance, a "conceptual training component" describing just what the Internet is, and its potential for education, as well as the "hands-on" training activities. Based on the responses to the narrative question regarding expected use in their own classroom, where 48% of the teachers left this blank in year 1, and 53% left it blank in year 2, it is also apparent that approximately half of the teachers are entering training with very limited personal plans or expectations related to their own classrooms. Training activities should continue to recognize this low level of initial teacher awareness and expectation, and plan for the continued emphasis of specific classroom application. Such a low level of understanding before training also appears to reinforce the **critical** need for the Internet workshops currently being delivered by the Educational Service Units.

2) A variety of teachers are becoming involved in the Internet training, with the second year of training accessing a higher percentage of teachers in the early grades.

The data supports that a representative mix of teachers is being included in the initial training sessions. This representation indicates that participation in the training process is inclusive to most groups and levels of teachers. The data examined for the first six months of year 2 also indicates that a higher percentage of early grade teachers is now being trained, as indicated by the Figure 2.

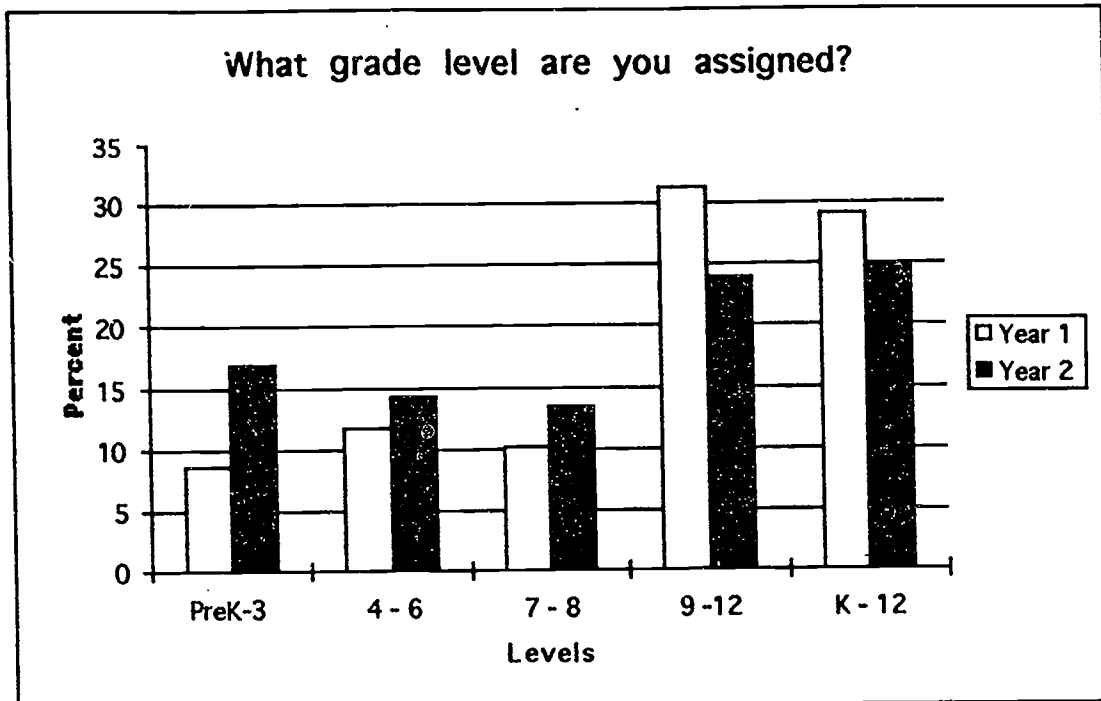


Figure 2.

The teachers being trained also seem to continue to have a "student involvement" philosophy that is consistent with research related to the effective uses of technology (and the Internet). This is indicated by the responses to questions related to student projects, research, and group work. In general, approximately 90% of the Nebraska teachers surveyed use such techniques periodically in their classrooms; suggesting that there is a fertile environment for classroom integration and the eventual student use of the Internet.

3) Initial training sessions are beginning to involve a higher percentage of teachers who are less computer literate in general.

It would appear that the training sessions are beginning to reach a set of teachers who are generally less computer literate than their colleagues who were trained in year 1. This is apparent from the higher percentage of teachers who are reporting "unfamiliar" or "low" when asked to provide their computer related proficiencies. An example is teacher reported proficiency in hypermedia, which is illustrated by the graph below in Figure 3.

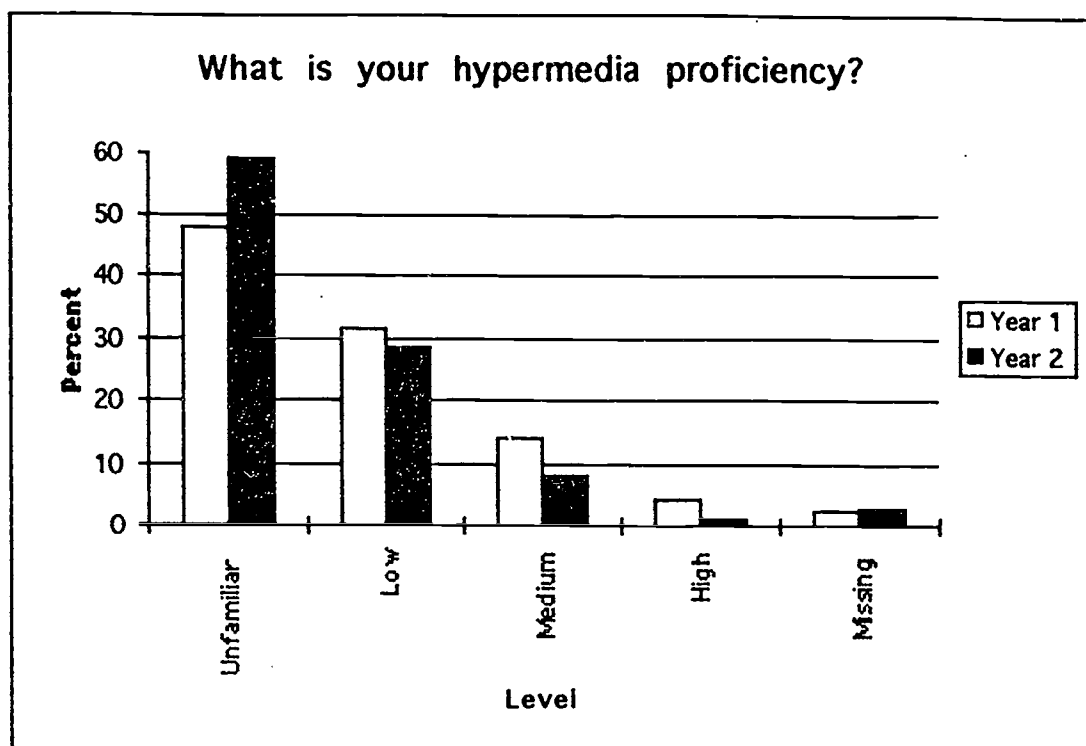


Figure 3.

Such a result should be generally encouraging to the Educational Service Units, suggesting that their training process is teaching a wide variety of teachers. The increased involvement of teachers who are initially less computer literate, should also have the added benefit of improving the general computer literacy of these teachers. This benefit is particularly possible when considering that many Internet related activities that these teachers will be trained in, such as the use of the World Wide Web, involves skills which are closely related to many other important computer topics, such as hypermedia and computer graphics.

4) Examples of innovative classroom uses of the Internet need to be widely distributed to the teaching population.

There are some very innovative uses of the Internet being used by Nebraska teachers, and in particular, teachers are becoming more involved in the use of the Internet's information based resources. Accessing NASA's archives for elementary space lessons, and using ray tracing programs from the National Education Supercomputer Center for secondary physics classes, are both excellent examples of effective Internet use in the classroom. However, it is important to determine the best way to utilize these "success stories" for assisting the statewide awareness of the Internet and its potential for education. This is especially important, since in general, most of the teachers being reached in current training sessions are not already aware of how other teachers are using the Internet effectively in their classrooms. This is implied by the high response of teachers (94% for year 1, and 97% for the first six months of year 2) who did not list any individual that might be contacted as using the Internet in an innovative way within the classroom.

Such an awareness of successful colleagues, and related educational projects, would seem to be important for the eventual acceptance of the Internet as a viable classroom tool. Many of the teacher uses which are currently underway, and those

just beginning, provide excellent "in-state" examples for increasing teacher awareness of the potential use of the Internet in the K-12 classroom. The Educational Service Units will want to consider how best to "utilize" these success stories, both within and outside of training sessions, to provide a strong "vision" for teachers who are interested in expanding their own classroom use of the Internet.

Implications From the Post Survey Data:

The implications of the post survey data will be organized in four categories, educator use of Internet, student use of Internet, Internet access, and future use and trends of Internet use.

Educator Use:

1) Teachers use the Internet often, and most teachers report accessing the Internet at school, although few Internet-connected computers are currently available to them.

This finding would indicate that teachers need better access to the Internet at school. Internet-connected computers, as well as the time to get on-line, should be priorities of school buildings. The respondents ranged from very novice Internet users (<1 month) to veterans (>1 year). When asked about their last Internet usage, two-thirds of the ground mail respondents indicated that they had used the Internet within 1 month, although 15% indicated that they had not been on-line for over 6 months. NOTE: The e-mail respondents had all been on-line within 1 month, since they responded to the survey via e-mail. When asked how often do they use Internet at school and at home, many more indicated that they use the Internet at school rather than at home. Of the e-mail respondents, 57% reported accessing the Internet at school daily and 28% reported accessing the Internet at home daily, while 25% of the e-mail respondents accessed the Internet daily at school and 9% daily accessed the network at home. See Figure 4.

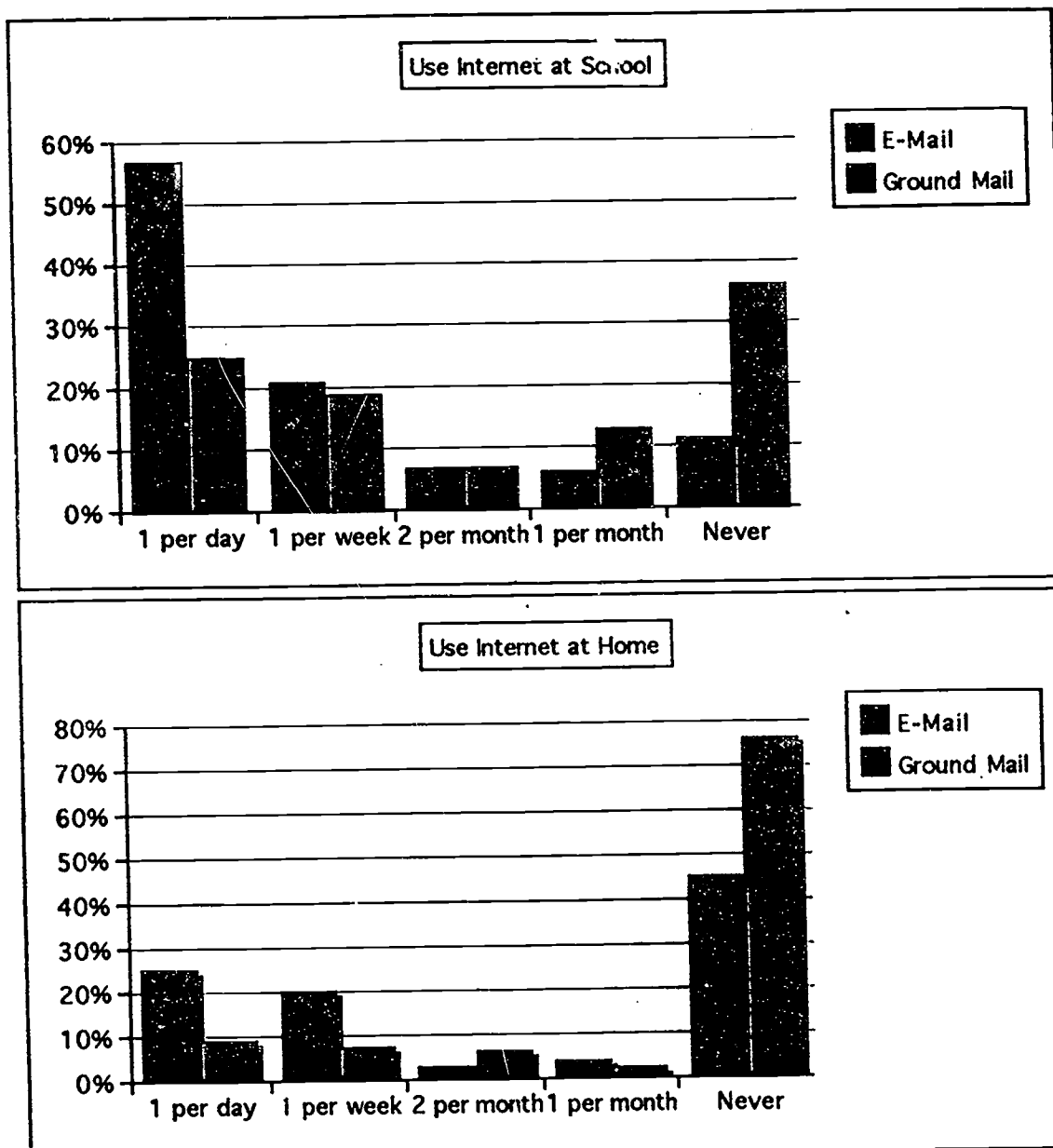


Figure 4.

Respondents also reported that there are few Internet-connected computers available to them at school, as illustrated by Figure 5. Note that over one-half of the respondents have zero or only one Internet-connected computer currently available to them in the school environment.

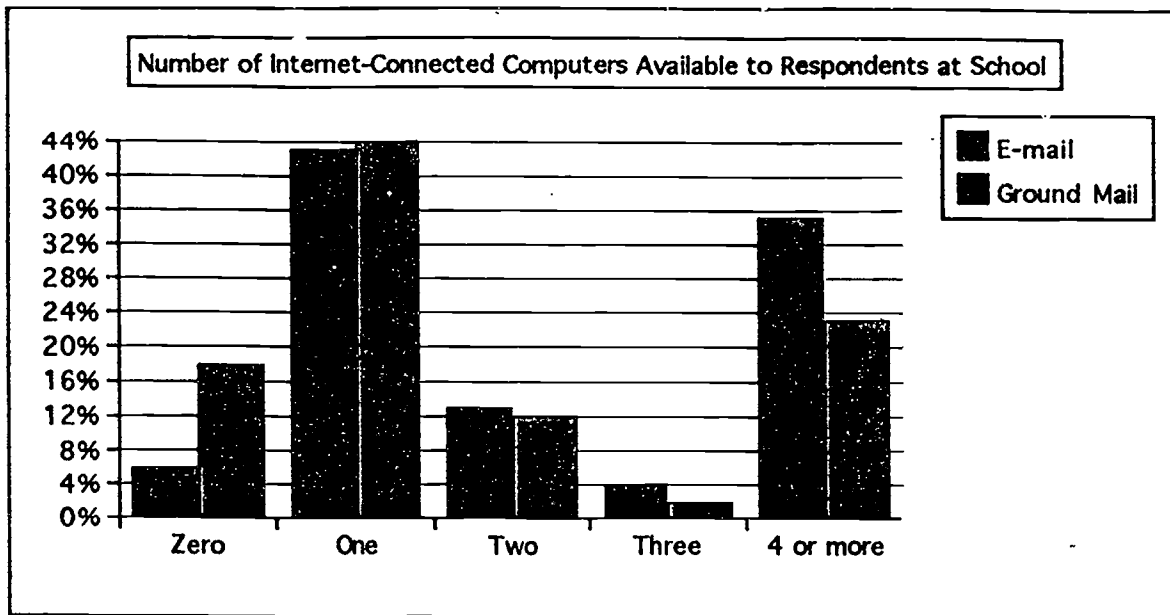


Figure 5.

2) Nebraska educators' initial use of electronic mail supports that they are using the Internet in very appropriate ways.

Lack of communication between and among educators has been a problem in K-12 education for many years, with the isolation of individual teachers limiting progress in effective teaching techniques. The Internet seems to be helping the communication challenges of teachers and may help to give teachers ongoing information and ideas to help in their teaching.

The Internet protocol used most by teachers is electronic mail, with 89% of the e-mail respondents and 46% of the ground mail respondents using electronic mail at least weekly. Other protocols were much less used. See Figure 6.

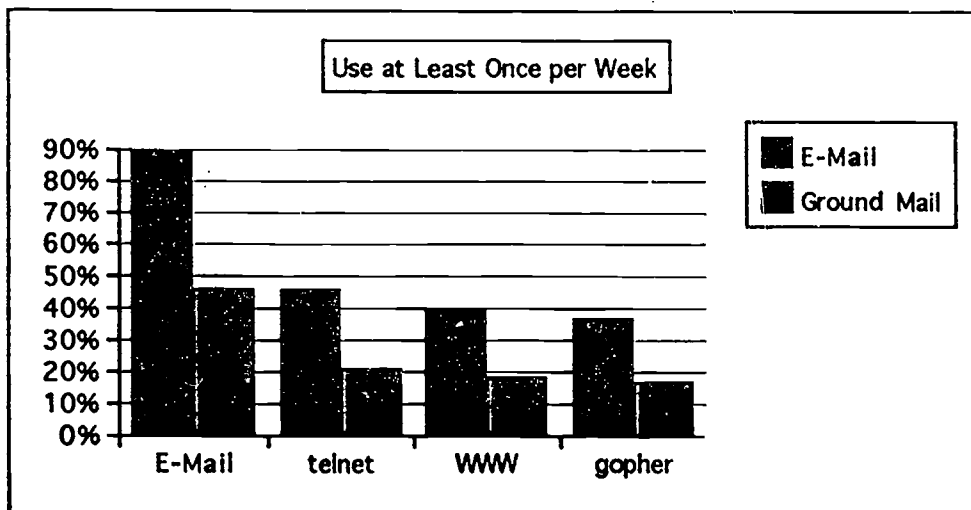


Figure 6 (a)

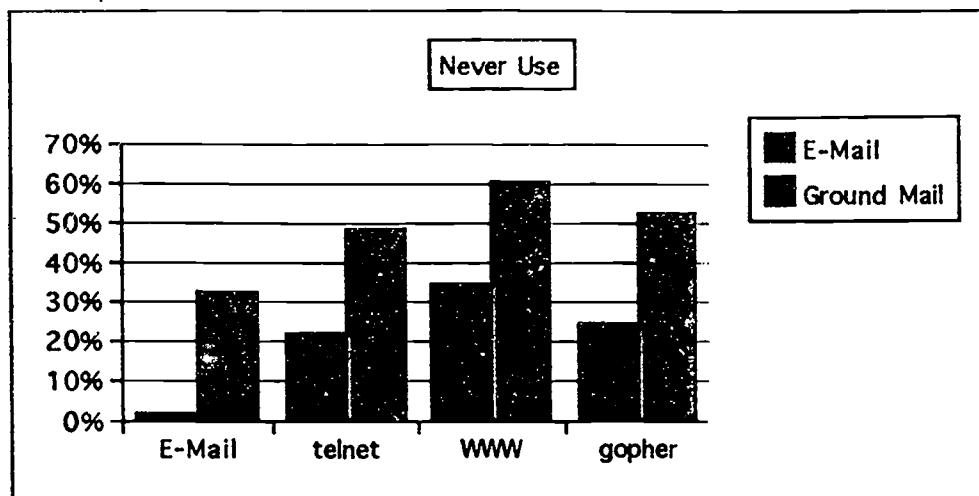


Figure 6 (b)

3) Educators tend to use specialized computer personnel as their primary source of help.

Although Internet using educators are seeking help from several sources (see Figure 7), it appears that specialized personnel, such as technology coordinators and ESU personnel, are most often used as resources. As more and more teachers become Internet users, one must question whether these limited number of specialized personnel can answer the questions of teachers in a timely matter. Possibly, schools and teachers need to develop "building" or "teacher" networks to be able to get timely answers to challenges and questions. Also, knowledgeable students may be excellent classroom resources for some answers to Internet questions.

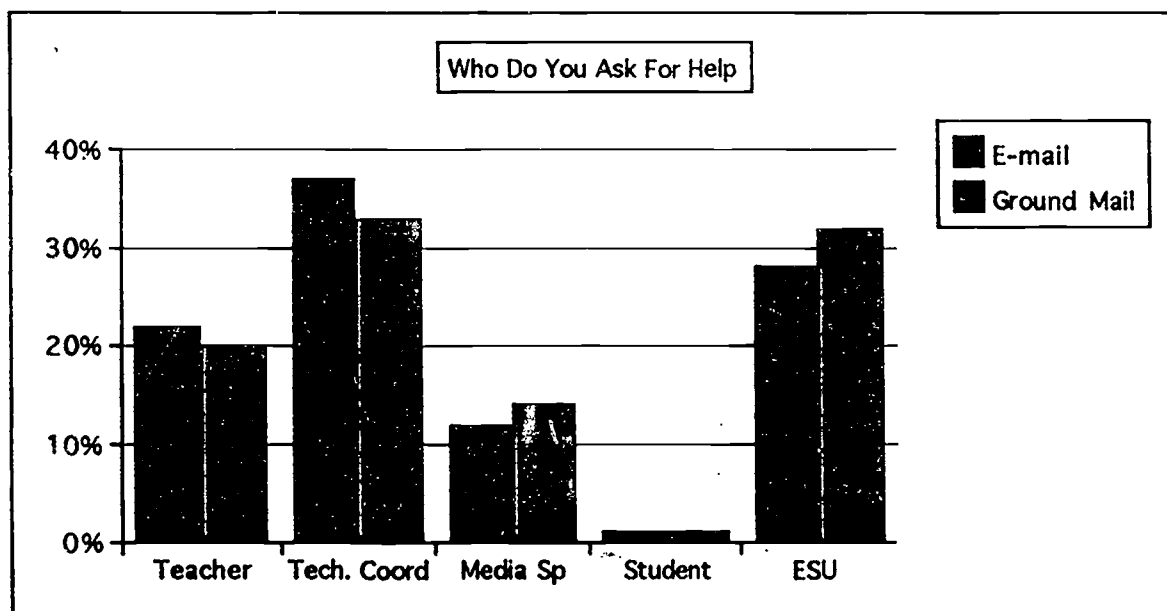


Figure 7.

Student Use:

4) Relatively few Nebraska students are currently using the vast and varied resources of the Internet.

Use of the Internet by their students was also reported by the responding educators. Less than one-half (e-mail respondents-43%, ground mail-32%) of the educators have had their students use the Internet in any way. Student access to Internet-connected computers is currently limited. Almost one-half of the schools have zero or one Internet-connected computer available to their students (see Figure 8), and when asked why educators do not have their students use the Internet, over 30% stated that an "Internet-connected computer is not available", while 15% stated that students do not have accounts, and 15% indicated that software and hardware limitations constrained student use.

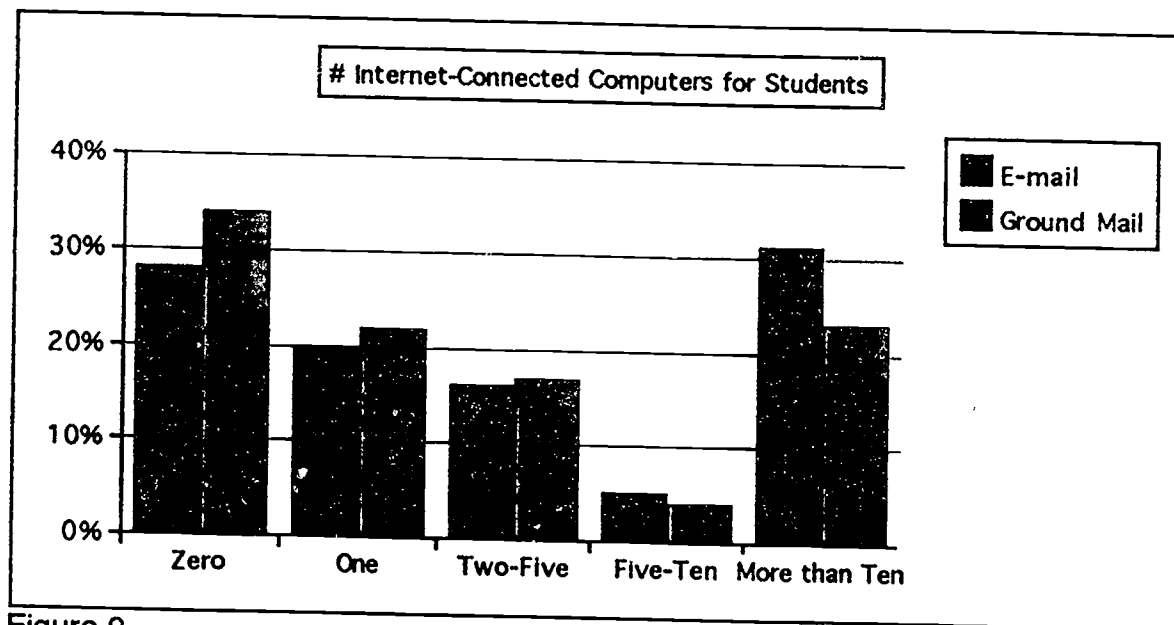


Figure 8.

As noted in the "Innovative Users" section of this report, active student use of the Internet seems important to learning in many model classrooms. The challenges of student use, such as access to Internet-connected computers and the inappropriate material issue, needs to be addressed quickly if Internet connectivity is going to help the overall reform our classrooms into active learning environments that will prepare our students for life in the 21st century.

In order to achieve this goal, buildings need to have direct Internet connections, and local area networked computers need to be readily available to all students. It is very encouraging that based upon a national analysis, Nebraska is a real leader in the statewide progress and efforts in this area (see report section on Progress Compared to Other States).

5) Principal support seems important to Internet use.

Respondents were asked to rate their principal's support of the use of Internet with their students. The data indicates that few principal's are reported as "discouraging" Internet use at this time (see Figure 9). The rate of support seems much higher than in the November 1994 pilot survey (as reported in the 12 month

report) and continued training and support of these building instructional leaders would seem crucial to the success of improving education by innovative and creative uses of the Internet. School districts, ESU's, and university colleges of education need to continue to help principals understand the potential of the Internet, as well as help them develop school settings that encourage creative and technology based learning environments.

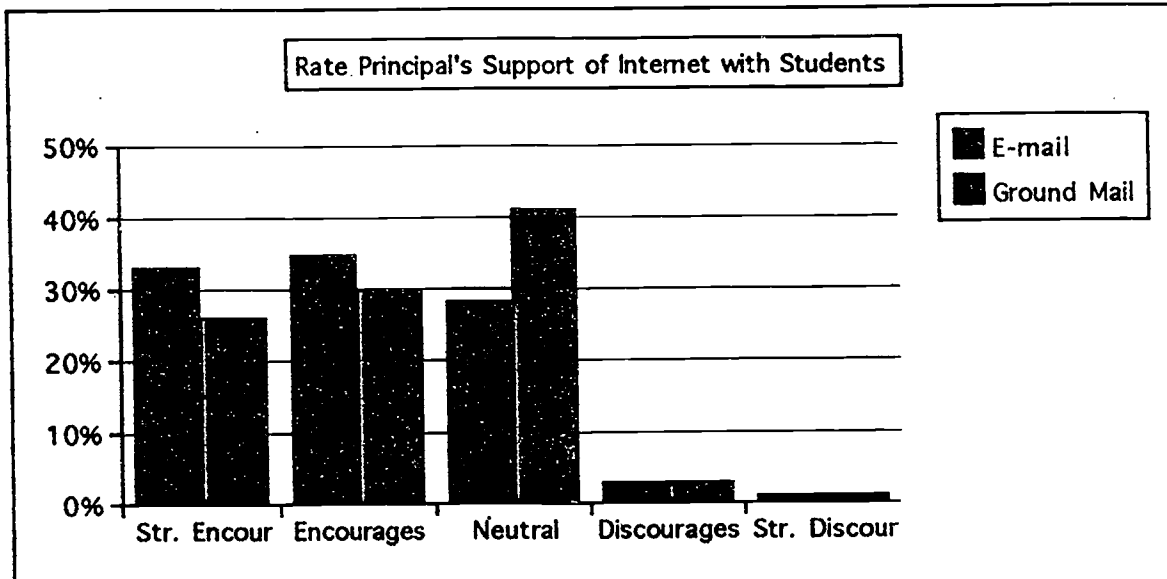


Figure 9.

Encouragement by the building principal to use Internet can be a powerful variable in a teacher's classroom Internet use. A statistical correlation was found to support this premise. There is a positive correlation between the variable dealing with principal support for student use and several Internet use classroom variables, including whether teachers had their students use the Internet, the frequency of teacher use of e-mail, and the frequency of teacher Internet use at school. Figure 10 reports the related Pearson Correlation coefficients.

Pearson Correlation Coefficients

Students use of the Internet	.159 *
Frequency of electronic mail use	.144 *
Frequency of Internet use at school	.171 *

* = < .01 Significance (2-tailed)

Figure 10

Future Plans of Internet Use:

6) Responding educators plan to use the Internet and see its value to them for communication and information gathering.

Communication is very important to improving education, and the ability of teachers to "break down the walls of the classroom" is a very exciting aspect of Internet access. Also, as teachers gather information and learn from new and varied resources, they can become better prepared in their fields, and practice the same information based learning skills that they are teaching their students.

When asked how they plan on using the Internet in the future, less than 10% of the total respondents indicated that they "don't plan on using Internet". This is very encouraging, as it indicates that a very high majority of Internet-trained educators see value in this tool. The responding educators indicated that they mainly plan on using the Internet in the future for communication (e-mail respondents-51%, U.S. mail respondents-36%) and for information gathering (e-mail respondents-38%, U.S. mail respondents-51%).

7) Nebraska educators see value in having their students use Internet and it's information gathering capabilities.

As indicated earlier in this section, few students currently use Internet, but the protocol most often used was electronic mail, followed by World Wide Web, and gopher. On the surveys, a question was asked about the potential of the Internet for future student use. Over one half indicated that World Wide Web held the most promise for helping students in the future, followed by gopher (approximately 20%) and e-mail (approximately 12%). To support this finding, information gathering, often seen as an important component of student research, was the most often selected planned student use of the Internet in the future. See Figure 11.

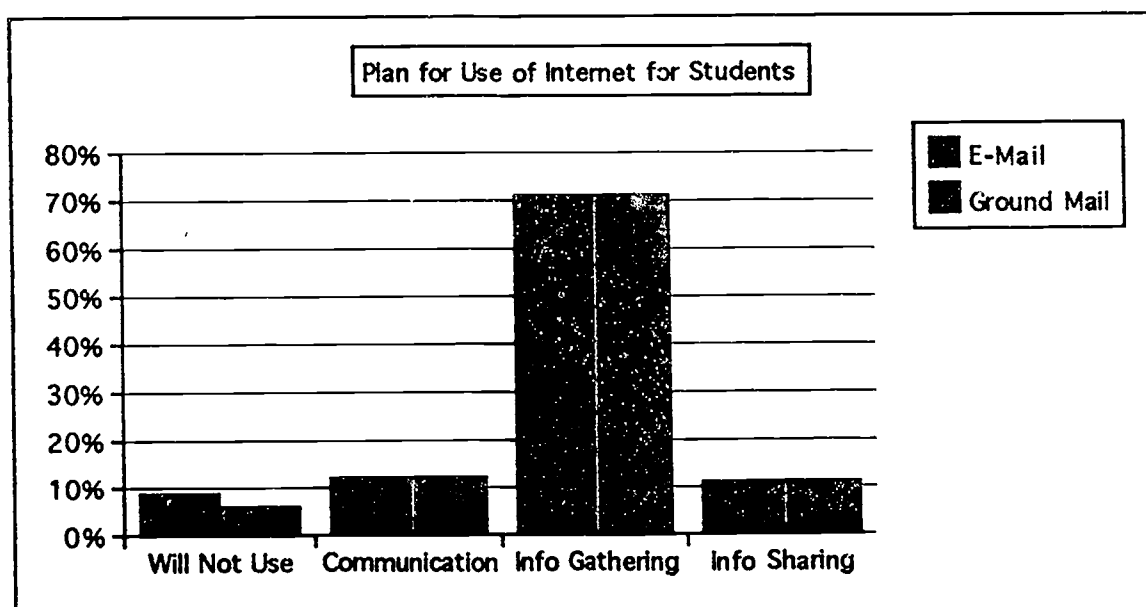


Figure 11

8) A majority of Nebraska teachers, who have had Internet training, are comfortable with computers, and a high percentage feel that computers are very important to the future of their profession.

Educators who responded to the surveys were asked to indicate some attitudes towards computers in general, and the response were very positive. When asked if they "enjoy using computers", 73% of the electronic mail and 43% of the ground mail respondents indicated that they "strongly agree". Also, when asked to respond to the

statement, "Computers are very important to the future of education", 87% (electronic mail) and 71% (U.S. Mail) of the respondents indicated that they "strongly agree". See Figure 12.

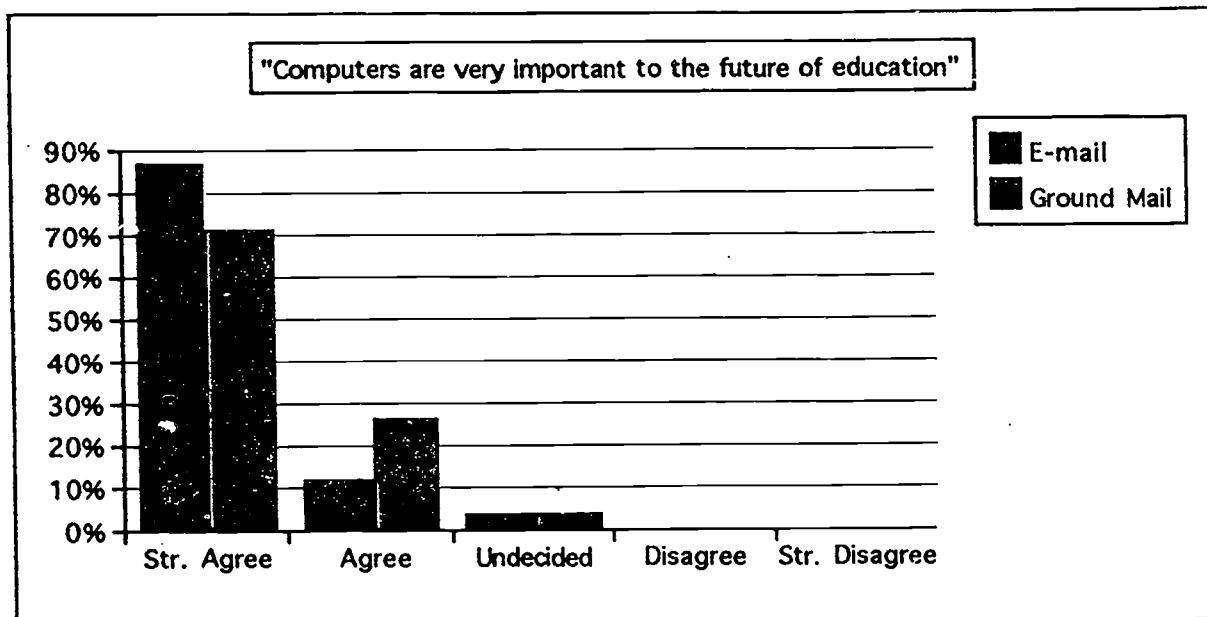


Figure 12.

It is very encouraging that this large group of Nebraska educators seem to see computers as a powerful and necessary addition to the educational "toolbox". As the state continues its efforts to improve the educational opportunities for our students, teacher comfort with computers and their belief in computer use will no doubt be two important components to progress in this area.

Implications from the Server Data:

Several implications were apparent from the data gathered related to server use and support.

1) The statewide pace of training is substantial.

The Educational Service Units are currently facilitating Internet based training at an overall rate of approximately 6000 individuals per year. Most of the training sessions have currently been introductory in nature. However, with the rapid pace of change on the Internet system, and considering the Internet's vastly expanding resources and capabilities, it would appear that follow-up and additional training sessions will no doubt be needed. School districts must also continue to look for innovative ways for freeing up teachers for training, since training sessions offered outside of the school day are typically very limited in time, and traditionally less effective for technology based inservices.

2) Statewide connectivity is progressing well, but the reliance on modem based technology at many schools is a significant barrier to progress.

The state is moving to a direct connect environment more rapidly and more successfully than most of the states in the United States. However, the continued reliance on modem based technology at many schools threatens to "leave these

schools far behind" in accessing the numerous and vast instructional resources represented by the Internet. Modem based access severely restricts the use of the World Wide Web, makes uniform training sessions very difficult, and limits the instructional use of the Internet in the classroom.

3) School districts must work to become more self-reliant on follow-up Internet support.

With the rapid pace of initial training, and the ongoing connectivity support being facilitated by the educational service units, it is somewhat alarming that roughly 30% of the teachers responding to the post survey suggest that they will first ask the Educational Service Units for help if they have a question on the Internet. On-site help from knowledgeable colleagues, media specialists, and technology coordinators, would seem to be the most effective "first question" resource. Such a potentially large number of "call-in" support questions, many no doubt easily handled on-site at the school, threatens to "overwhelm" the Educational Service Units support system. Training sessions must continue to emphasize the critical roles of the school district, school, and individual users, in assisting in local on-site support activities. In addition, individual schools and districts must plan for "sharing the responsibility" of ensuring the proper use of the Internet by students, particularly when individual student access is provided.

Implications from the Innovative Uses of Teachers and Projects:

Several initial implications are apparent from the classroom observation and teacher interview data related to the evaluation at the 18 month reporting period. These implications will no doubt evolve as additional data is accumulated and analyzed for later reporting periods.

1) Student use appears to be a critical component to "innovative" curricular use.

The most impressive and effective curricular uses of the Internet observed in classrooms identified by other teachers as "innovative", typically involved putting the students on-line for the majority of the classroom's Internet based activities. This included having the students do the research, help plan the activity, and even do routine typing tasks. The classroom enthusiasm of "involved" and "motivated" students was often one of the most observable aspects of the more "innovative" classrooms, and was often identified by teachers as a major outcome related to the Internet use by students.

2) Student "research" using the Internet appears to be at a considerably higher level than in more traditional classroom activities.

The student research being conducted over the Internet appears to be much richer than more traditional school library based research. Often, classes not only retrieved textual information, but accessed and incorporated information from visual images (such as NASA moon images), on-line software programs (such as physics ray tracing, or biology frog dissection programs), and even communicated with on-line experts (such as a genetics scientist). The concept of "student research" seemed to be more dynamic, and teachers reported that even the word "research" appeared to be used more commonly by students. In addition, the Internet research appeared to be

more interactive, with students sharing information as well as retrieving it (such as when talking to content experts, or students at other sites).

3) Most innovative curricular uses were multi-disciplinary in nature.

The involvement of two or more disciplines in a classroom Internet activity was very common in the observed classrooms, and in the classroom activities referenced by interviewed teachers. Often, when two or more teachers were involved in a project, a multi-disciplinary aspect of the Internet appeared to be the curricular "glue" that facilitated the professional collaboration between the teachers within the activity.

4) Innovative uses by teachers typically overcame significant technical and instructional barriers

Most of the teachers involved in innovative classroom activities reported confronting and overcoming a wide range of technical and curricular problems in order to initiate the activity. Access to needed equipment was the most common problem referenced by the teachers, and often involved limited modem or phone line access. The mention of a lack of personal planning time was the most common curricular problem referenced by teachers, followed by concerns related to student keyboarding difficulties.

5) Innovative classroom uses often accessed "non-traditional" classroom resources.

Most of the innovative classroom activities related to the Internet accessed information which was not typically available in other mediums or school based classroom resources. For example, current pictures of Jupiter were downloaded by an elementary science class, and daily White House schedules were accessed by a high school social studies class. In some classroom activities, these "non-traditional" resources also included students in other countries, such as Russia, Finland, and Australia. Thus, many of the innovative classroom uses involved using the Internet to secure information not available, or not readily available, from traditional sources, such as the school textbook or library resources.

6) Teacher and school based grant opportunities, such as Nebraska Lottery funds, are an important catalyst to innovation.

Many of the teachers involved in the most innovative and extensive classroom projects had plans to eventually seek additional funding through either lottery or private foundation funds. Many of these teachers were very excited about the opportunity to write a grant, and to widen the dissemination of their personally designed and successful project. Often, the possibility of such later funding seemed to be a real catalyst for the teachers to be willing to endure the extra work and effort personally associated with pursuing an innovative Internet based project.

General Implications:

Three general implications are also apparent from the evaluation process.

1) Significant progress is being made for the implementation of LB 452.

The evaluation team has presently noted a very high level of progress related to LB 452 and its implementation by the Nebraska Educational Service Units. In addition, other contributing organizations, such as the Nebraska Department of Education, and the University of Nebraska system, have joined in the efforts to support

the use of the Internet in Nebraska education, often through joint activities with schools and the Educational Service Units. The movement toward direct connections, and the use of the World Wide Web is also an encouraging sign for eventual implementation of the Internet into education. More than 238 school based direct connect school hook-ups are currently in process in the state, with more than 200 planned for the next year. Over 16,000 users are now being directly supported by the Educational Service Units and their Internet related operations.

Indeed the implementation of LB 452 has been statewide and comprehensive in nature, and has included the following activities:

- The installation and use of UNIX based computers to provide support
- The establishment of connectivity for many Nebraska schools
- The operation of a statewide training program
- The development and distribution of training support materials
- The enhanced technology planning of individual schools and districts
- The facilitation of model projects and teacher uses
- The development and implementation of a formative evaluation process

2) Community interest is starting to parallel educational interest.

Many community groups are beginning to show a parallel interest in the educational use of the Internet, and to build upon local educational activities. This is most apparent in some of the smaller communities of Nebraska, where companies such as Great Plains Communications, are helping Nebraska towns examine the possibility of starting a local bulletin board system. Interest is also strong in Lincoln and Omaha, where area based freenet systems are being planned and initiated. It would appear that an active partnership between educational and community interests related to the Internet has real potential.

3) Nebraska continues to play a national leadership role.

Nebraska is continuing to play a leadership role in several areas related to integrating the Internet into K-12 education. In particular, Nebraska's full statewide approach to the Internet, its tax based funding, its commitment to teacher training, its continued planning for a direct connect environment, and its formal evaluation process, provides a successful and comprehensive state model, fairly unique to the nation. Some states are still struggling to develop a statewide networking plan, while Nebraska's plan is well underway and operational. However, most states are now pursuing education related connectivity at a very rapid pace, and Nebraska will need to continue to actively plan for the future of Internet based innovation, in order to maintain its current educational leadership.

In summary, it is apparent from these evaluation implications that Nebraska has a solid start toward the implementation of LB 452, and its integration of the Internet into the K-12 schools in Nebraska. The continued high level of cooperation between many state institutions would seem critical to continued progress in the state. Based upon a review of the relevant literature, and periodic status reports from other states, it is also clear that Nebraska is well ahead of a considerable majority of states in bringing the power of the internet into the K-12 classroom.

Dissemination Progress

The evaluation project is also planning and beginning to implement a formal dissemination process. Five methods of dissemination are currently being used and developed, and are in various stages of operation.

1) Evaluation Project Six Month Reports

An evaluation project report is being completed every six months, and is represented currently by this document. Periodically, the project reports will also be submitted to the Eric Document service for access in their entirety by interested professionals.

2) Conference Presentations and Papers

Conference presentations, including conference proceedings and papers, are also being used as a dissemination tool for the Evaluation Project. Current report summaries are delivered at the 1995 Society for Information Technology and Teacher Education Conference (SITE), and the 1995 National Educational Computing Conference (NECC).

3) Journal Articles

Several articles will also be submitted for review and possible publication in selected professional journals, including journals such as the Ed Tech Review. A manuscript summarizing this 18 month report of the Evaluation Project is currently in progress.

4) Evaluation World Wide Web Page

An Internet accessible World Wide Web page is also being developed as a "dynamic representation" of innovative uses of the Internet across the state of Nebraska, and is targeted to be on-line by the 24 month reporting period. This World Wide Web page will not only provide current summaries of the evaluation process and this report in electronic form, but will also provide actual links to innovative projects and sites.

5) Newsletter Summary

A short electronic newsletter is also being developed for helping disseminate the innovative uses of the Internet found in Nebraska associated with the Evaluation Project. This medium will also provide information to teachers related to possible curricular sites. The Electronic Newsletter is currently in its pilot stages, with an expanding distribution list. Eventually, it will be incorporated into the Evaluation World Wide Web page. *To subscribe to this electronic newsletter send an electronic mail message requesting the newsletter to the e-mail address k12eval@unomaha.edu.*

Next Period Evaluation Goals (24 month period)

The following are the goals of the Internet Evaluation Project for the 24 month reporting period of the evaluation. These goals will be refined with feedback from the Nebraska Educational Service Units, and the ongoing formative evaluation process itself. The goals focus on continuing the evaluation process development, and moving into a more complete implementation of the data collection and dissemination procedures.

- 1) To continue to refine, expand, and implement the overall evaluation process
- 2) To continue to collect and summarize teacher pre-training and post training surveys
- 3) To organize and continue to document examples of innovative Internet uses
- 4) To work with school districts on evaluation related "case study" investigations
- 5) To continue the investigation of the progress and plans of other states
- 6) To continue to refine and develop the dissemination process
- 7) To continue to submit external funding proposal(s) to facilitate the evaluation

Summary

It is apparent from this 18 month reporting period of the evaluation, that the Nebraska Educational Service Units, and collaborating Nebraska Institutions, are making considerable progress related to bringing the Internet into the K-12 classrooms of Nebraska. Indeed, Nebraska would seem to be a leader in meeting the national initiative described by Vice President Gore to "connect all of our classrooms, all of our libraries, and all of our hospitals and clinics by the year 2000" (National Institute of Standards and Technology, 1994, p. 57).

In particular, the collaborative environment and efforts within Nebraska are quite exceptional, and promise to be the most important "key" to eventual statewide success of the endeavor. Nebraska's comprehensive approach to bringing the Internet into the classroom, including leadership in funding, teacher training, model school environments, direct connect technology, and formal evaluation activities, is already providing a useful model to other states who are working toward similar goals. However, the general pace of change in technology, and the hastily expanding efforts by other states, makes it of **critical** importance that Nebraska institutions continue to support this state-wide endeavor, in order for Nebraska to continue in its current leadership role.

The state of Nebraska, along with the nation, is embarking on a very difficult but worthwhile task in bringing the Internet into the K-12 schools. It is a difficult task, because Nebraska is truly ahead of most states in trying to bring the Internet into K-12 classrooms, so there are currently few states to model on a national scale. It is a worthwhile task, because of the Internet's exciting potential for impacting education in the state of Nebraska, as well as the nation. The Internet provides a chance to truly break down the walls of individual classrooms, and to make available the vast resources of information that exist around the world.

As this evaluation project continues, a unique opportunity is provided through the chance to examine how an entire state confronts one of the greatest innovations and challenges that has come to education in some time. The evaluation process itself will help teachers from the field, and the students they work with, to have a collective voice on how this new challenge is developing, and what can be done to help ensure that state resources are used effectively.

This evaluation will continue to be refined and expanded as the amount of data grows, and as teachers are trained and attempt to use the Internet in their classrooms. Like the Internet, the evaluation process will be dynamic rather than static. Yet the underlying purpose of the evaluation project will remain unchanged, which is fundamentally to help the students of Nebraska receive the maximum benefit of the resources being brought to bear on their behalf, and to help bring them into the 21st century of education, through an effective integration of the Internet "information superhighway" into K-12 classrooms of Nebraska.

Appendices

- Appendix A: References
- Appendix B: Pre-Training Survey
- Appendix C: Post-Training Survey
- Appendix D: Pre-Training Survey Graphs
- Appendix E: Post-Training Survey Graphs
- Appendix F: Internet Coordinator's Data Request
- Appendix G: Innovative User Electronic Mail Protocol
- Appendix H: Innovative User Interview Protocol

Appendix A

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Appendix B

Pre-Training Survey

Y N

Telecomputing Survey

Purpose: The Internet telecomputing network has an exciting potential for use in the K-12 classroom, and may well be one of the most innovative new technology tools of the information age. Yet very little is known about how to most effectively help teachers to learn to access the full potential of this powerful new tool. The purpose of this survey is to gather some general demographic and attitudinal information from teachers beginning training on this system, so as to better understand the needs of new users, and to assist in the more effective use of the Internet system in education.

Anonymous and Voluntary Participation: All data collected by this survey will be kept in the strictest confidence. No individual data will be reported in any report, and only group information will be analyzed and described. Individuals have the full right to participate or not participate in the survey as desired, without any repercussions of any kind for this decision.

Survey coordinated by: Neal Toop, Neal Grandgenett, UNO, & Nebraska Educational Service Units

Name _____ **Address** _____

E-mail Address: _____ Phone () _____

Would you be available to complete a follow-up survey or interview related to your Internet use? (Please Circle One) Yes No

Please mark the bubble (only one per item) that best answers the following questions.

8. What is your age?
A. Under 30 B. 30-39 C. 40-49 D. 50-59 E. 60 or over

9. How many years have you taught school?
A. 1-5 yrs B. 6-10 yrs C. 11-15 yrs D. 16-20 yrs E. > 20 yrs

10. Approximately how many students per grade are in your school district?
A. < 51 B. 51-100 C. 101-200 D. 201-300 E. > 300

11. Do you have a school Technology Coordinator? (Select only one)

A. No	B. Yes District	C. Yes Building	D. Yes District&Building
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12/13. What area are you assigned? (Please select only one)
☐ A. Admin. ☐ B. Lang. Arts ☐ C. Fine Arts ☐ D. For. Lang. ☐ E. Math

← A. Media Sp. B. Science C. Social St. D. Self-contained
E. Other (please specify) _____

14. What grade level are you assigned? (Please select only one)

A. PreK-3 B. 4-6 C. 7-8 D. 9-12 E. K-12

15. What is your gender?
A. Female B. Male

16. What is your degree status at this time?
A. BA/BS B. BA/BS+15 C. Masters D. Masters+15 E. Doctorate

17. How often per month do you use cooperative learning groups in your classroom?
(leave blank if this question is not applicable to your situation)

18. How often per month do you have students develop projects? (leave blank if this question is not applicable to your situation)

19. How often per month do you lecture or demonstrate to your students? (leave blank if this question is not applicable to your situation)

20. How often per month do you have students use the computer? (leave blank if this question is not applicable to your situation) (OVER PLEASE)
A. 0 B. 1-2 C. 3-5 D. 6-8 E. >8

SUBVYŁY MARKING INSTRUCTION

- Use a NO. 2 Pencil
- Fill circles completely
- Erase cleanly

11-11-11

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361	362	363
364	365	366
367	368	369
370	37	

**NATIONAL
COMPUTER
SYSTEMS**

DO NOT
PRINT
IN THIS
AREA

21. How often per month do you have students research (on their own) a topic? (leave blank if this question is not applicable to your situation)
A. 0 B. 1-2 C. 3-5 D. 6-8 E. >8
22. How often per month do you give students assignments that involves writing (i.e. process writing)? (leave blank if this question is not applicable)
A. 0 B. 1-2 C. 3-5 D. 6-8 E. >8
23. How often per month do you have students use the library resources at your school? (leave blank if this question is not applicable to your situation)
A. 0 B. 1-2 C. 3-5 D. 6-8 E. >8
24. How fast can you keyboard/type?
A. Very Slowly (< 10 wpm) B. Slowly (10-19 wpm) C. Moderately (20-29 wpm) D. Rapidly (30-40 wpm) E. Very Rapidly (> 40 wpm)
25. I enjoy writing.
A. Strongly Disagree B. Disagree C. Undecided D. Agree E. Strongly Agree
26. I enjoy speaking in public (outside of classroom teaching).
A. Strongly Disagree B. Disagree C. Undecided D. Agree E. Strongly Agree
27. I enjoy using computers.
A. Strongly Disagree B. Disagree C. Undecided D. Agree E. Strongly Agree
28. Computers are very important to the future of education.
A. Strongly Disagree B. Disagree C. Undecided D. Agree E. Strongly Agree

We would like you to rate your current proficiency in using the following computer-related technologies. Using the following scale, please mark the bubble that best describes your proficiency in using each item.

- A. Unfamiliar - do not know what this item is
B. Low - little or no skill
C. Medium - some proficiency, could use some advanced training
D. High - very proficient, use regularly

- | | Unfamiliar | Low | Med | High |
|--|------------|-----|-----|------|
| 31. Problem solving / Higher order thinking | A | B | C | D |
| 32. Word processing | A | B | C | D |
| 33. Databases and/or Spreadsheets | A | B | C | D |
| 34. Programming (e.g. Logo, Basic, Pascal) | A | B | C | D |
| 35. Hypermedia (e.g., Hypercard, Hyperstudio, Linkway) | A | B | C | D |
| 36. CD ROM | A | B | C | D |
| 37. Video Disc | A | B | C | D |
| 38. Telecommunications | A | B | C | D |

- How do you plan to use the Internet either for yourself or your students? _____
- Do you know of anyone we should contact that is using Internet in innovative ways in their classroom? If so, please write their name and school. _____



Appendix C

Post-Training Survey

Nebraska Internet Survey
6 Month Follow-Up #2 -- May 1995

PURPOSE: The Internet telecomputing network has an exciting potential for use in the K-12 classroom, and may be one of the most innovative technology tools of the information age. Yet very little is known about how to most effectively help teachers to learn to access the full potential of this powerful new tool. The purpose of this survey is to gather some information from educators who have had some training on this system, so as to better understand the needs of users, and to assist in the more effective use of the Internet system in education. This information may be very important to the future of Internet in Nebraska schools.

ANONYMOUS AND VOLUNTARY PARTICIPATION: All data collected by this survey will be kept in the strictest confidence. No individual data will be reported in any report, and only group information will be analyzed and described. Individuals have the full right to participate or not participate in the survey as desired, without any repercussions of any kind for this decision. This survey is coordinated by Dr. Neal Topp, Dr. Neal Grandgenett, University of Nebraska at Omaha, & the Nebraska Educational Service Units.

E-Mail: k12eval@unomaha.edu

Please mail your completed survey in the enclosed envelope. This survey will take from 10-15 minutes to complete. Thank you very much for your response.

Your Name (optional) _____ **ESU #** _____

Your E-Mail Address (optional) _____

Please select **ONE** response for each item.

1) What response best describes your current position? (Select one)

A. Teacher B. Administrator C. Technology Coordinator D. Media Specialist E. Support Staff

2) Approximately how many months ago were you trained to use the Internet?

A. 0-2 B. 3-5 C. 6-8 D. 9-11 E. 12 or more

3) How is your school building connected to the Internet?

A. Modem
B. Direct Connection
C. Both Modem and Direct Connection
D. School is Not Connected

4) How many school Internet-connected computers are available to you personally at least once per day?

A. 0 B. 1 C. 2 D. 3 E. 4 or more

5) Approximately how many STUDENTS are in your building?

A. Less than 100 B. 100-199 C. 200-399 D. 400-799 E. 800 or more

6) How many Internet-connected computers are available to STUDENTS in your building?

A. 0 B. 1 C. 2-5 D. 5-10 E. More than 10

7) Of the Internet-connected computers in your building, how many are available to your STUDENTS at least twice per week?

- A. 0 B. 1 C. 2-5 D. 5-10 E. More than 10

8) Have you had your STUDENTS use the Internet?

- A. Yes B. No

9) If not, why not? (select the most important reason)

- A. An Internet-connected computer is not available
 B. The Internet system is too difficult to use
 C. I have no one to answer my questions
 D. The Internet is of little value in my classes
 E. Other (please specify) _____

10) Rate your principal's support of the use of Internet with your students?

- A. Strongly Encourages B. Encourages C. Neutral D. Discourages E. Strongly Discourages

11) If you had questions about using the Internet, who would you ask for help?
 (Please select the most likely person)

- A. Another Teacher
 B. Technology Coordinator
 C. Media Specialist
 D. Student
 E. ESU Personnel

12) How long ago did you last use the Internet?

- A. < 1 month B. 1-2 months C. 3-4 months D. 5-6 months E. over 6 months

13) Approximately how often do YOU personally use the Internet at school?

- A. Once per day B. Once per week C. Twice per month D. Once per month E. Never

14) Approximately how often do YOU personally use the Internet at home?

- A. Once per day B. Once per week C. Twice per month D. Once per month E. Never

15) Approximately how often do YOU use e-mail?

- A. Once per day B. Once per week C. Twice per month D. Once per month E. Never

16) Approximately how often do YOU use telnet?

- A. Once per day B. Once per week C. Twice per month D. Once per month E. Never

17) Approximately how often do YOU use gopher?

- A. Once per day B. Once per week C. Twice per month D. Once per month E. Never

18) Approximately how often do YOU use ftp (file transfer protocol)?

- A. Once per day B. Once per week C. Twice per month D. Once per month E. Never

19) Approximately how often do YOU use World Wide Web? (i.e.-Mosaic, Netscape, Lynx, MacWeb)

- A. Once per day B. Once per week C. Twice per month D. Once per month E. Never

20) Approximately how often do you have your STUDENTS use e-mail?

- A. Once per day B. Once per week C. Twice per month D. Once per month E. Never

21) Approximately how often do you have your STUDENTS use telnet?

- A. Once per day B. Once per week C. Twice per month D. Once per month E. Never

22) Approximately how often do you have your STUDENTS use gopher?

- A. Once per day B. Once per week C. Twice per month D. Once per month E. Never

23) Approximately how often do you have your STUDENTS use ftp (file transfer protocol)?

- A. Once per day B. Once per week C. Twice per month D. Once per month E. Never

24) Approximately how often do you have your STUDENTS use the World Wide Web? (i.e.-Mosaic, Netscape, Lynx, MacWeb)

- A. Once per day B. Once per week C. Twice per month D. Once per month E. Never

25) Do you plan on using the Internet much more within the next 6 months?

- A. Yes B. No

26) What needs to change if you PERSONALLY are going to use the Internet significantly more in the future?

27) Do you plan on having your STUDENTS use the Internet significantly more within the next 6 months?

- A. Yes B. No

28) What needs to change if YOU are going to have your STUDENTS use the Internet much more in the future?

29) In your opinion, which Internet application has the most potential for you as a TEACHER? (Please select one response)

- A. E-Mail
B. Telnet
C. Gopher
D. File Transfer Protocol (FTP)
E. World Wide Web (i.e.-Mosaic, Netscape, Lynx, MacWeb)

30) In your opinion, which Internet application has the most potential for your STUDENTS? (Please select one response)

- A. E-Mail
B. Telnet
C. Gopher
D. File Transfer Protocol (FTP)
E. World Wide Web (i.e.-Mosaic, Netscape, Lynx, MacWeb)

31) How do YOU plan to use the Internet for yourself in the future? (Select the most important use)

- A. I don't plan on using the Internet
B. For communication (e-mail, conferencing, etc.)
C. For information gathering
D. For information sharing

32) How will your STUDENTS use Internet in the future? (Select the most important use)

- A. I don't plan on having my students use the Internet
- B. For communication (e-mail, conferencing, etc.)
- C. For information gathering
- D. For information sharing

33) Do you have a World Wide Web Server in your building?

- A. Yes
- B. No
- C. No, but we are planning on setting one up within 6 months

34) How often per month do you use cooperative learning groups in your classroom? (leave blank if this question is not applicable to your situation)

- A. 0
- B. 1-2
- C. 3-5
- D. 6-8
- E. >8

35) How often per month do you have students develop projects ? (leave blank if this question is not applicable to your situation)

- A. 0
- B. 1-2
- C. 3-5
- D. 6-8
- E. >8

36) How often per month do you lecture or demonstrate to your students ? (leave blank if this question is not applicable to your situation)

- A. 0
- B. 1-2
- C. 3-5
- D. 6-8
- E. >8

37) How often per month do you have students use the computer? (leave blank if this question is not applicable to your situation)

- A. 0
- B. 1-2
- C. 3-5
- D. 6-8
- E. >8

38) How often per month do you have students research (on their own) a topic? (leave blank if this question is not applicable to your situation)

- A. 0
- B. 1-2
- C. 3-5
- D. 6-8
- E. >8

39) How often per month do you give students assignments that involves writing (i.e. process writing)? (leave blank if this question is not applicable)

- A. 0
- B. 1-2
- C. 3-5
- D. 6-8
- E. >8

40) How often per month do you have students use the library resources at your school? (leave blank if this question is not applicable to your situation)

- A. 0
- B. 1-2
- C. 3-5
- D. 6-8
- E. >8

41) I enjoy writing.

- A. Strongly Agree
- B. Agree
- C. Undecided
- D. Disagree
- E. Strongly Disagree

42) I enjoy speaking in public (outside of classroom teaching).

- A. Strongly Agree
- B. Agree
- C. Undecided
- D. Disagree
- E. Strongly Disagree

43) I enjoy using computers.

- A. Strongly Agree
- B. Agree
- C. Undecided
- D. Disagree
- E. Strongly Disagree

44) Computers are very important to the future of education.

- A. Strongly Agree
- B. Agree
- C. Undecided
- D. Disagree
- E. Strongly Disagree

Again, thank you very much for your participation.

Internet Studies Office, College of Education, UNO, Omaha, NE 68182-0163

Nebraska Internet Survey
6 Month Follow-Up #2
April 1995

ELECTRONIC MAIL VERSION

Please respond to this survey by using the REPLY function of your e-mail.

PURPOSE: The Internet telecomputing network has an exciting potential for use in the K-12 classroom, and may be one of the most innovative technology tools of the information age. Yet very little is known about how to most effectively help teachers to learn to access the full potential of this powerful new tool. The purpose of this survey is to gather some information from you teachers who have had some training on this system, so as to better understand the needs of users, and to assist in the more effective use of the Internet system in education. This information may be very important to the future of Internet in Nebraska schools.

ANONYMOUS AND VOLUNTARY PARTICIPATION: All data collected by this survey will be kept in the strictest confidence. No individual data will be reported in any report, and only group information will be analyzed and described. Individuals have the full right to participate or not participate in the survey as desired, without any repercussions of any kind for this decision.

Survey coordinated by: Neal Topp, Neal Grandgenett, UNO, & Nebraska Educational Service Units--
e-mail k12eval@unomaha.edu

Please respond to this survey by using the REPLY function of your e-mail. Indicate your response by placing an X before the appropriate item.

This survey will take from 10-15 minutes to complete. Thank you very much for your response.

Please select ONE response for each item.

1) What response best describes your current position? (Select one)

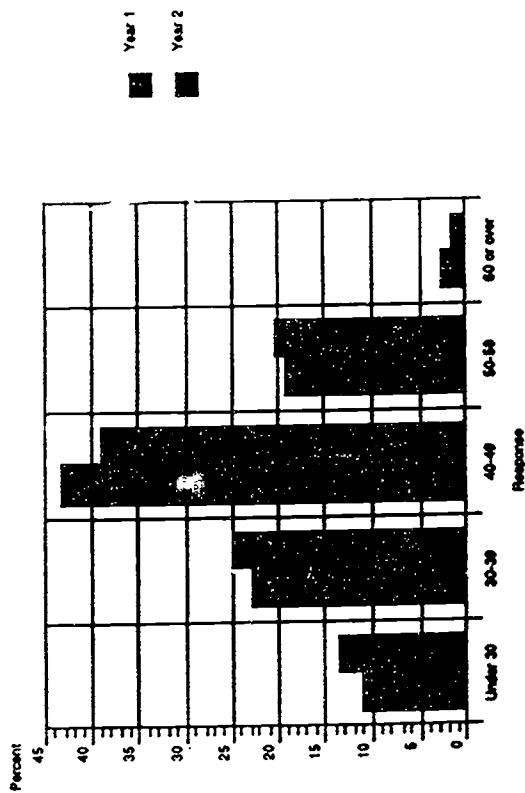
- A. Teacher
- B. Administrator
- C. Technology Coordinator (no teaching)
- D. Media Specialist
- E. Support Staff

The rest of the survey is similar to the U.S. Mail version. To save duplication costs, the rest of the survey is omitted.

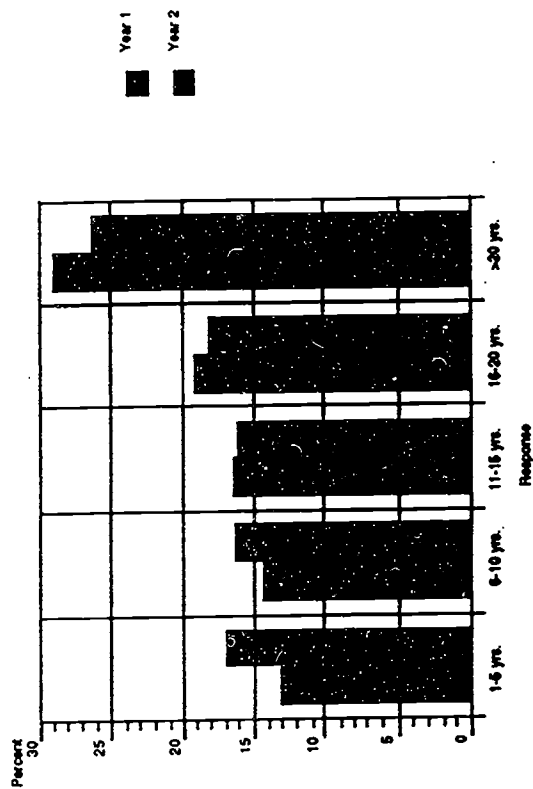
Appendix D

Pre-Training Survey Graphs

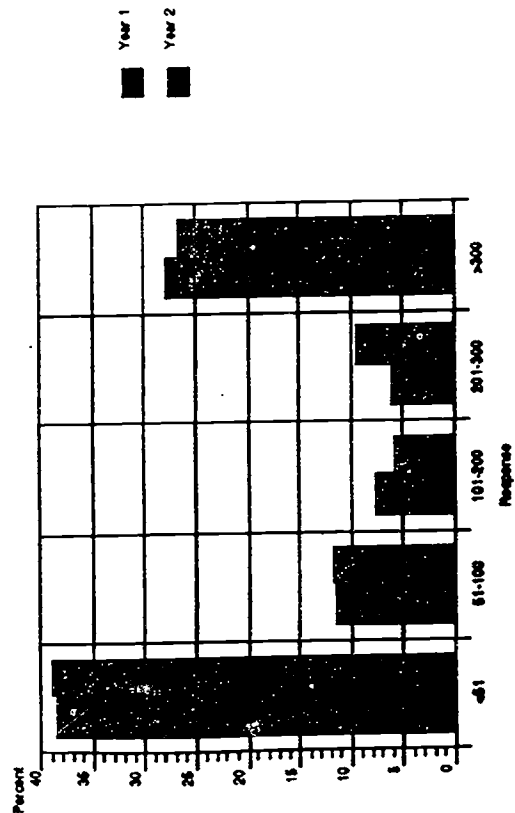
Age of Respondents



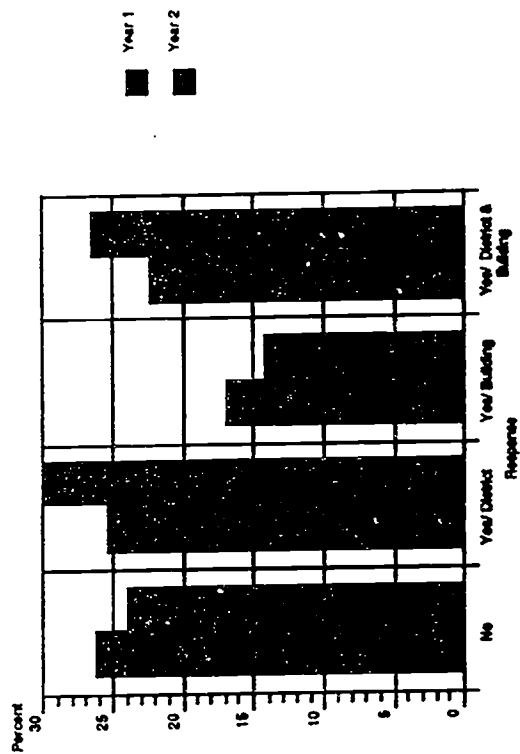
Years Taught School



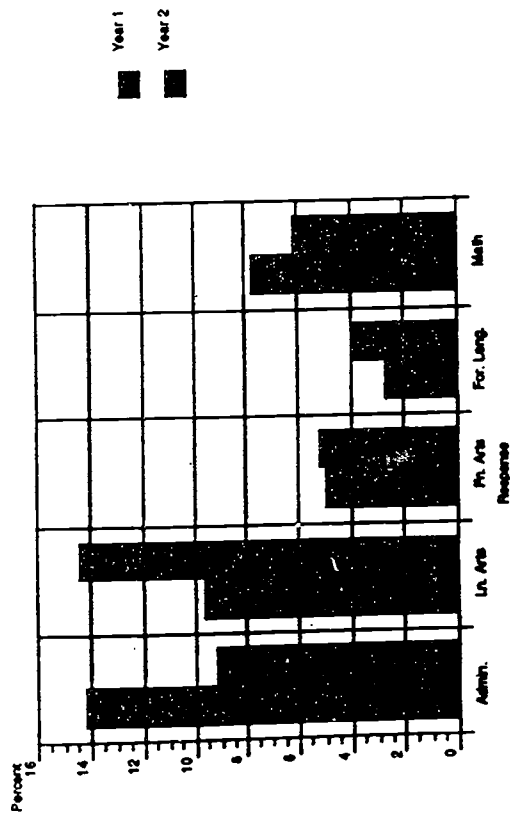
How Many Students Per Grade in Your School District?



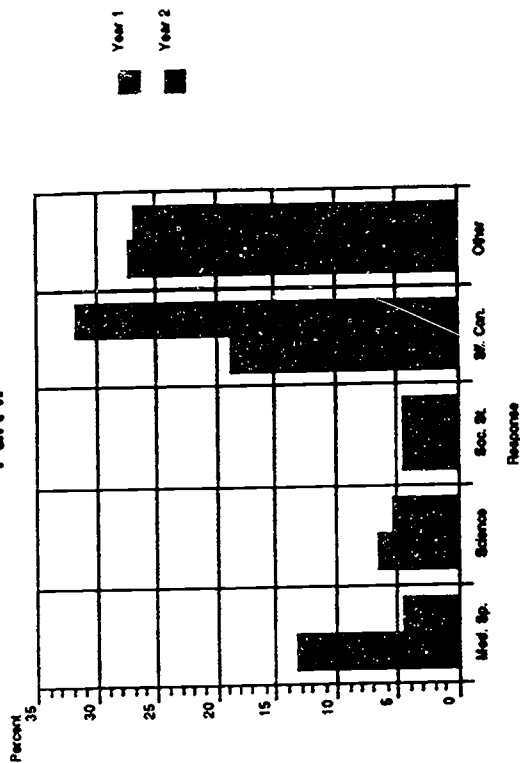
Do You Have a School Technology Coordinator?



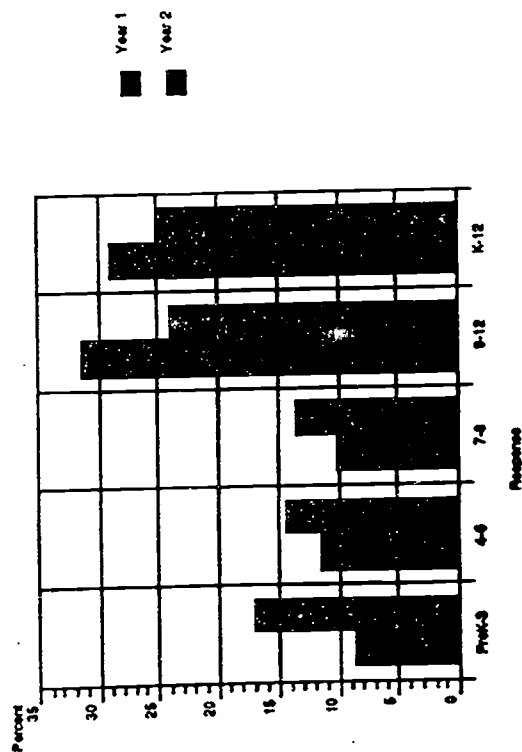
What Area Are You Assigned? Part I



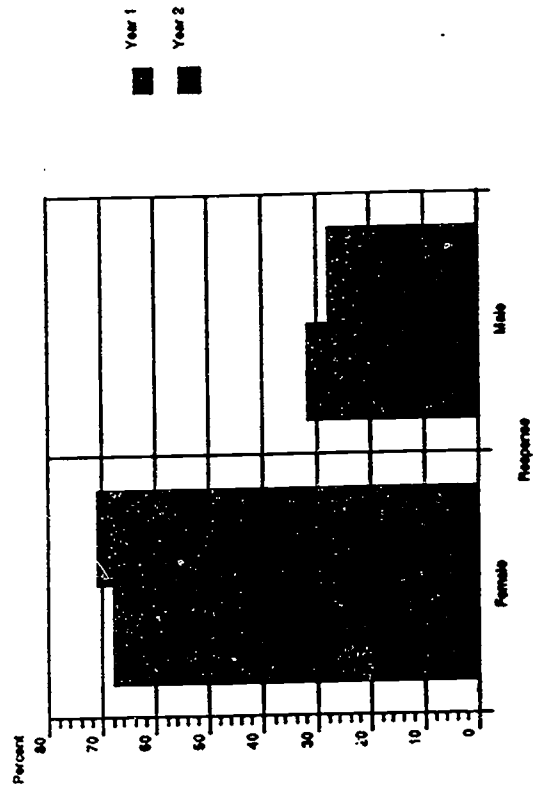
What Area Are You Assigned? Part II



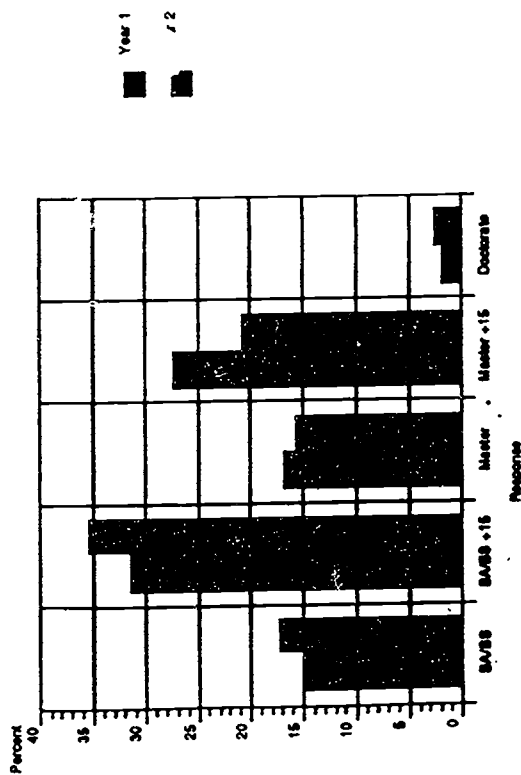
What Grade Level Are you Assigned?



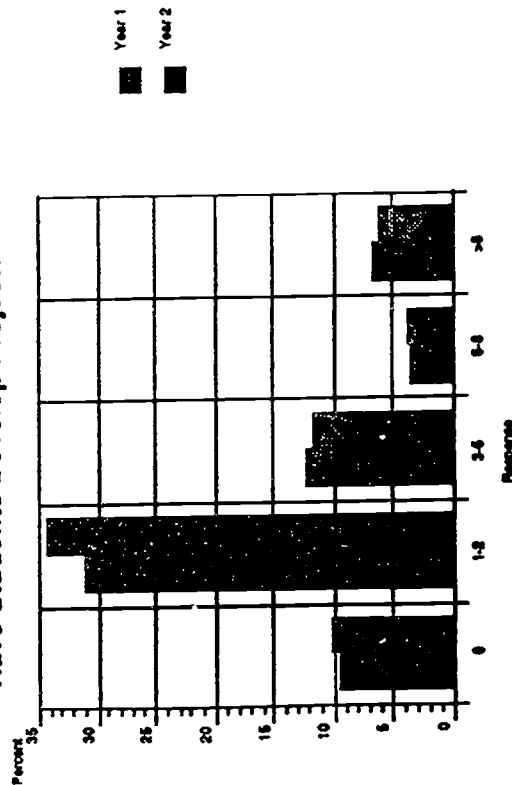
Gender of Respondent



What Is Your Degree Status?

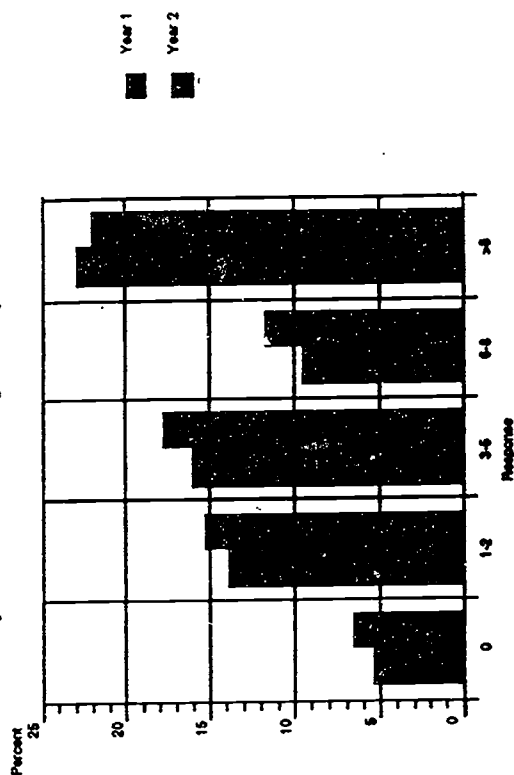


How Often Per Month Do You Have Students Develop Projects?

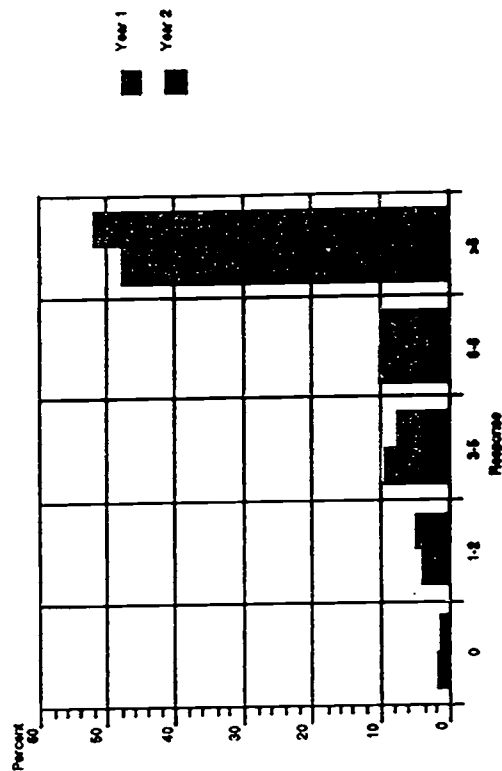


62

How Often Per Month Do You Use Cooperative Learning Groups?

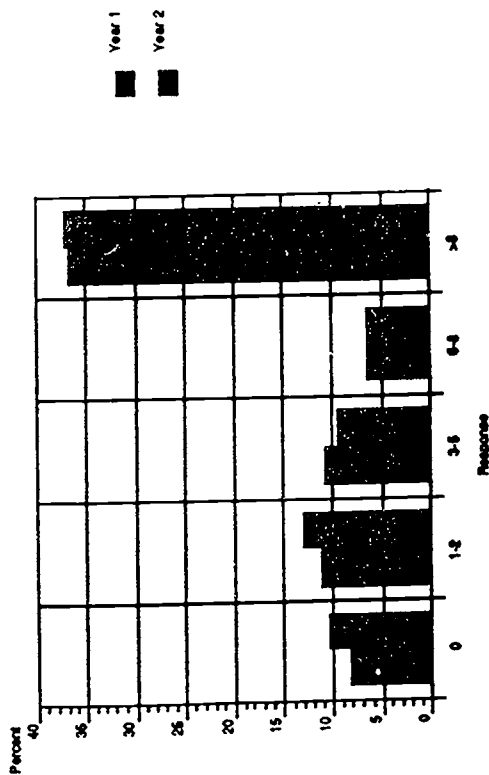


How Often Per Month Do You Lecture or Demonstrate to Your Students?

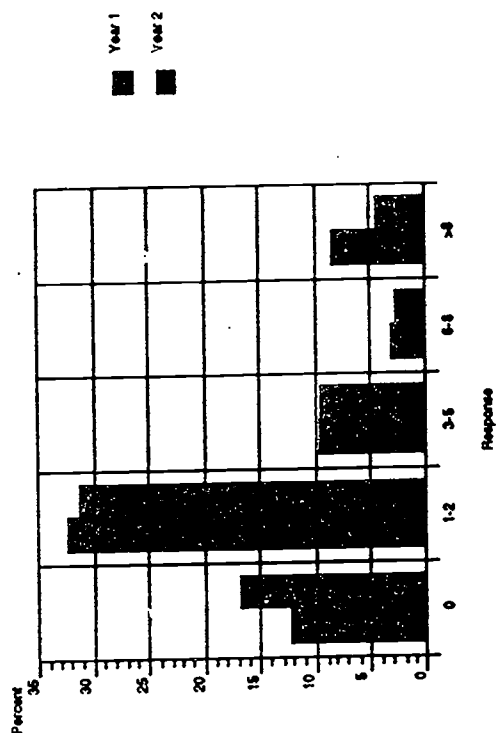


63

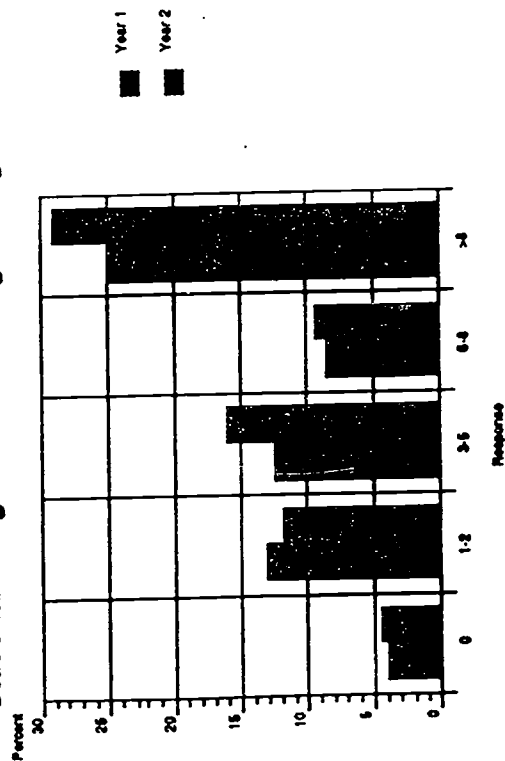
How Often Per Month Do You Have Students Use the Computer?



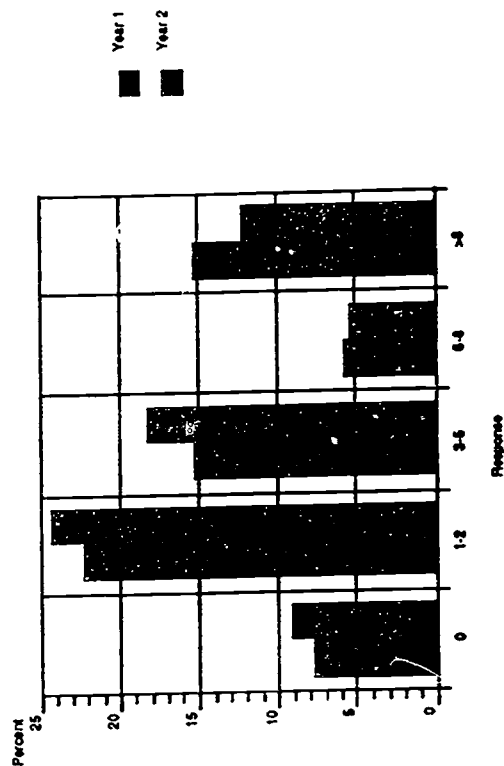
How Often Per Month Do You Have Students Research a Topic?



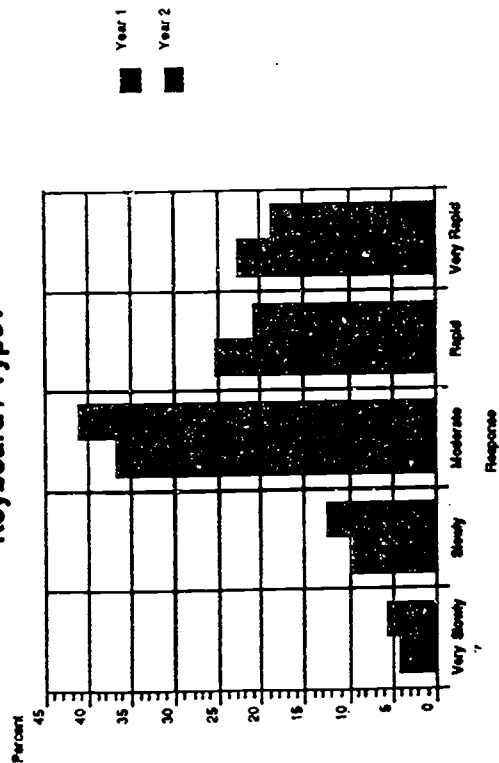
How Often Per Month Do You Give Students Assignments Involving Writing?



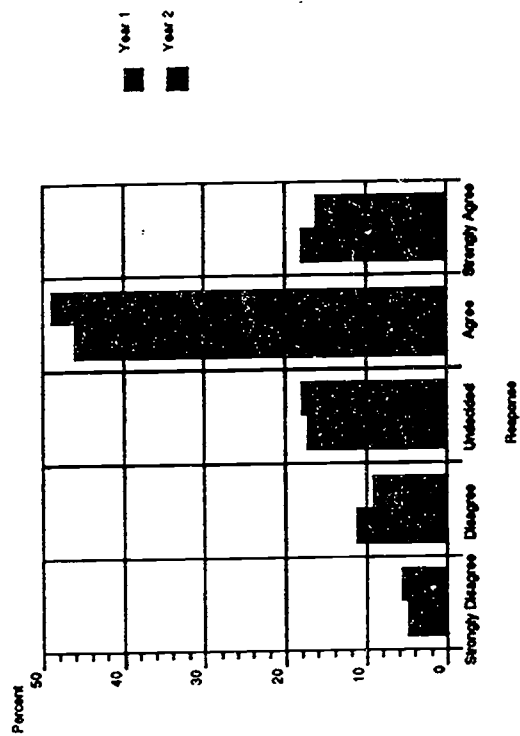
How Often Per Month Do You Have Students Use the Library Resources?



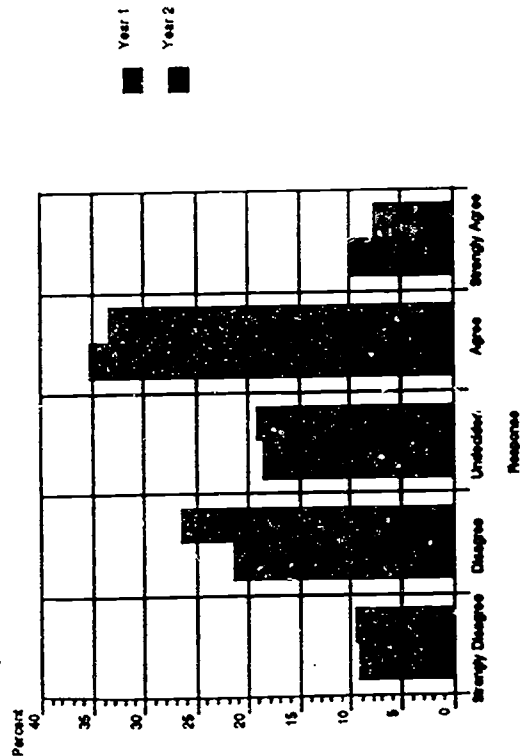
How Fast Can You Keyboard / Type?



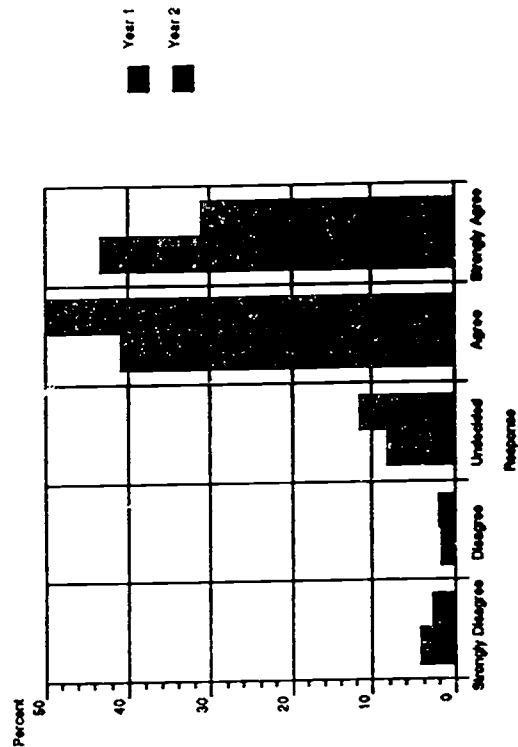
I Enjoy Writing



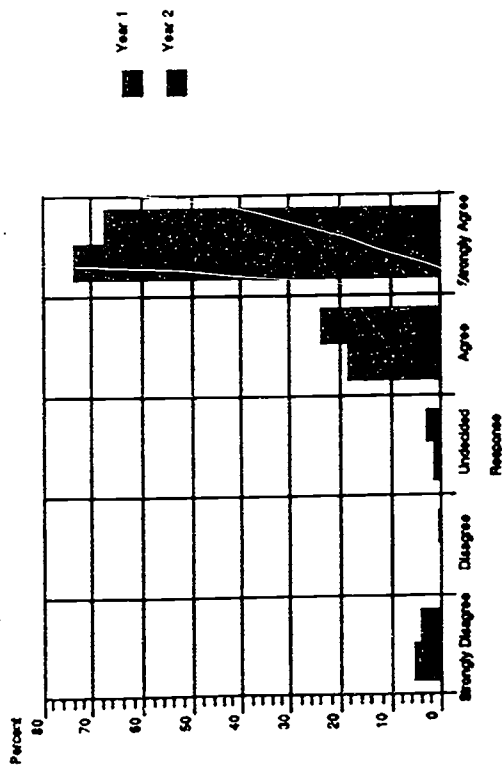
I Enjoy Speaking in Public (outside of classroom teaching)



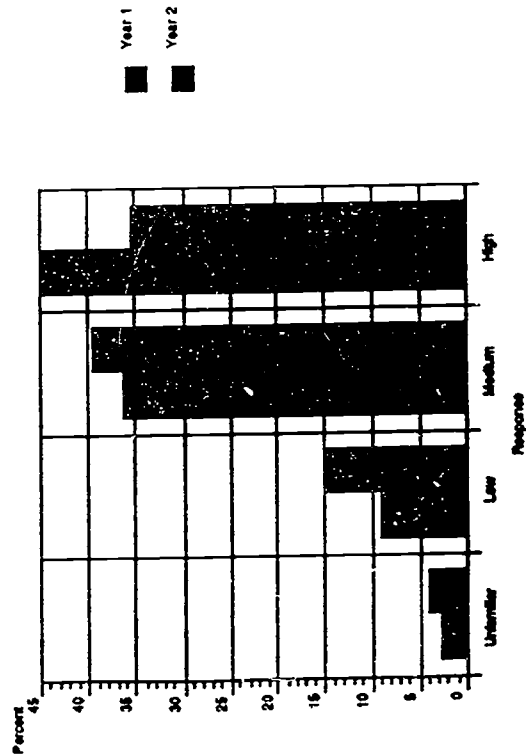
I Enjoy Using Computers



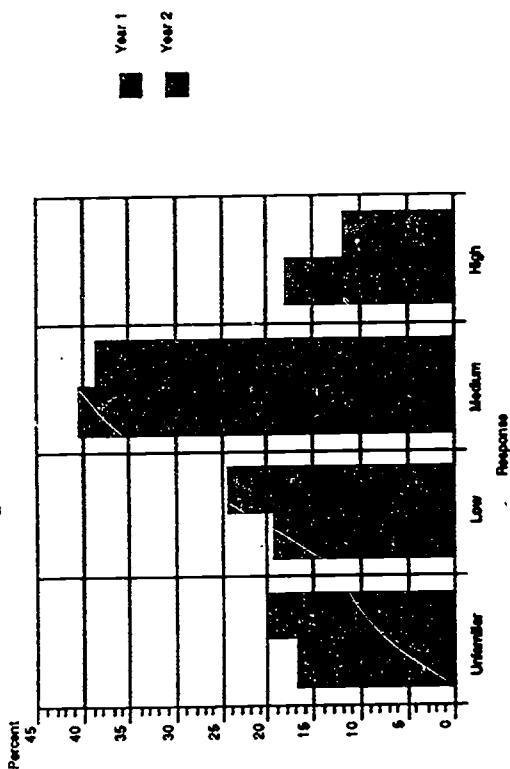
Computers are Very Important to the Future of Education



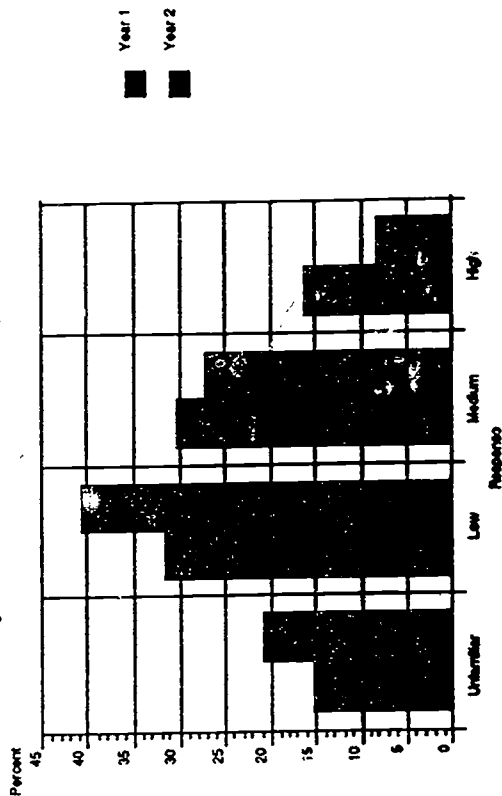
Wordprocessing Proficiency



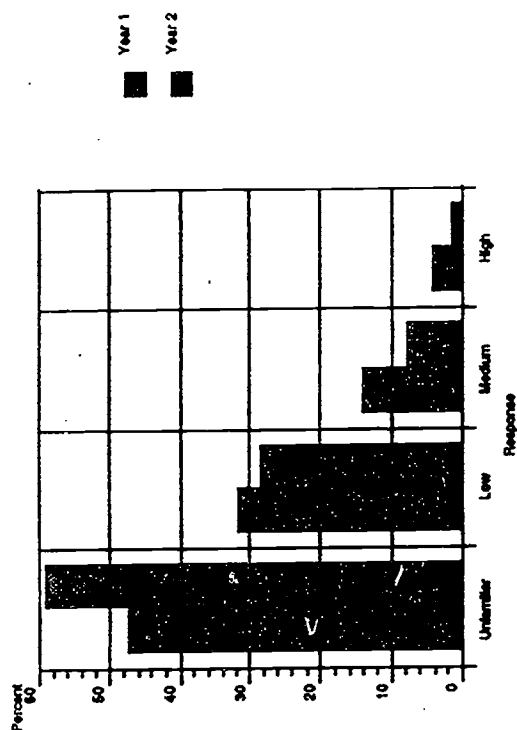
Problem Solving / Higher Order Thinking Proficiency



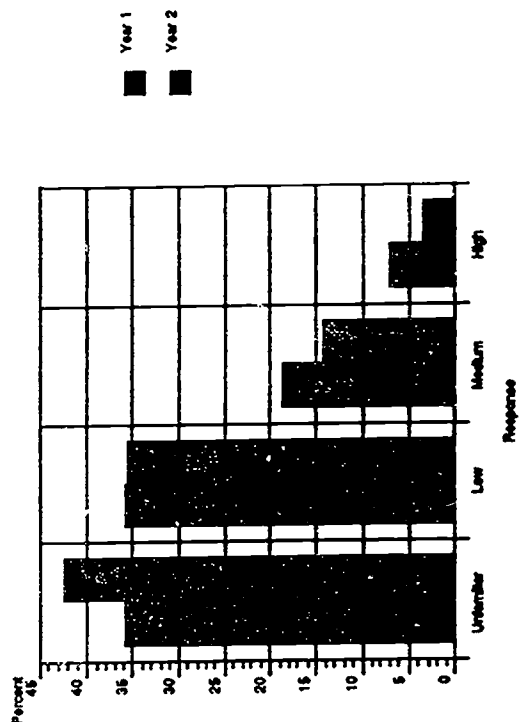
Database and/or Spreadsheet Proficiency



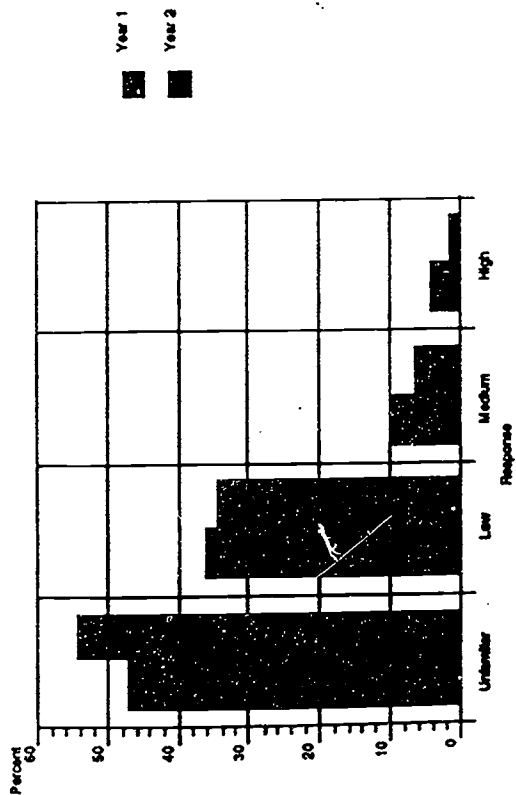
Hypermedia Proficiency



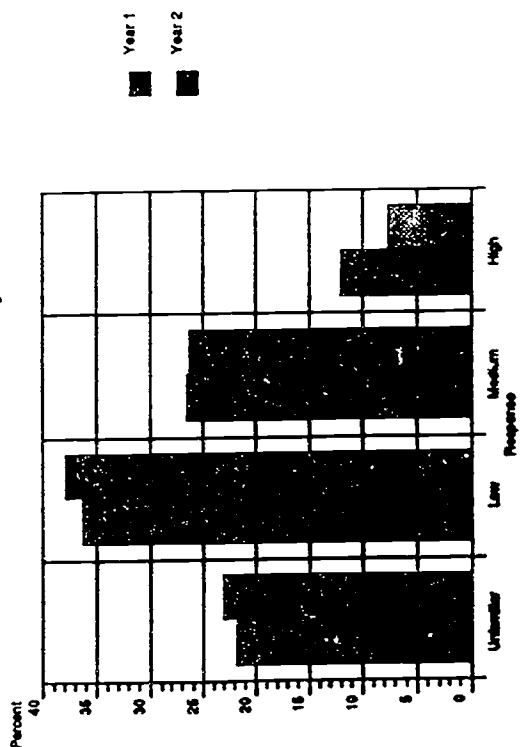
Video Disc Proficiency

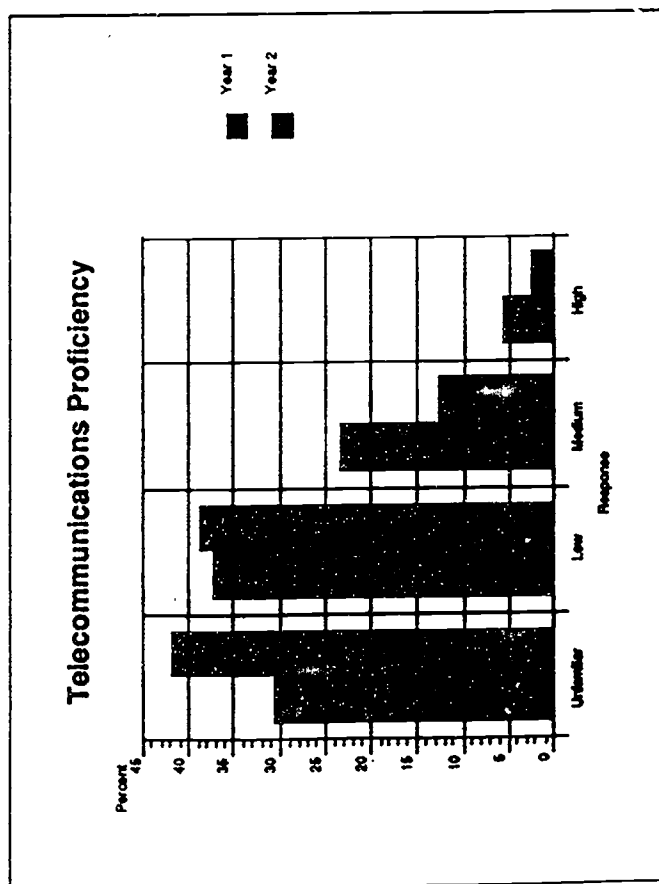


Programming Proficiency



CD ROM Proficiency

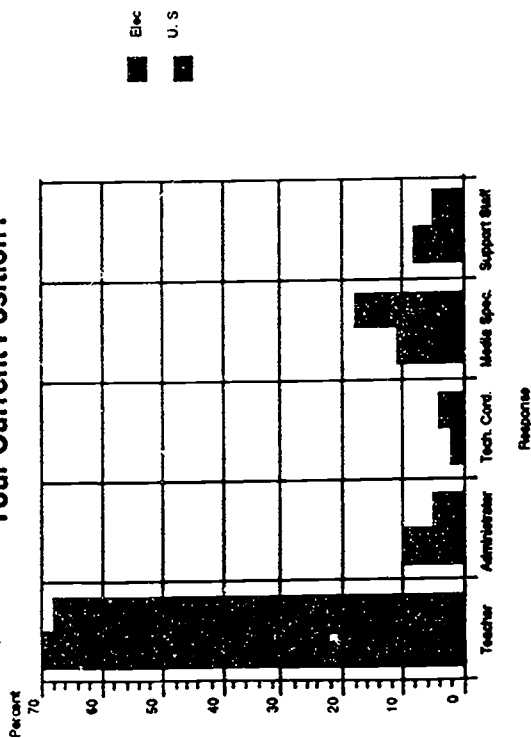




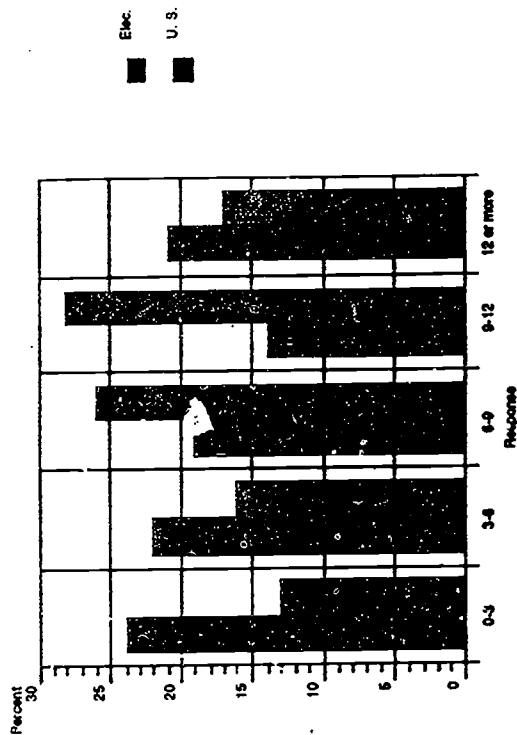
Appendix E

Post-Training Survey Graphs

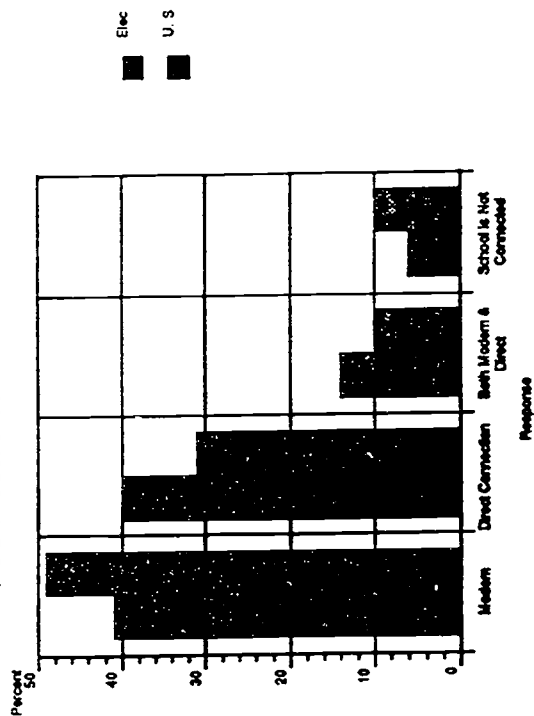
What Response Best Describes Your Current Position?



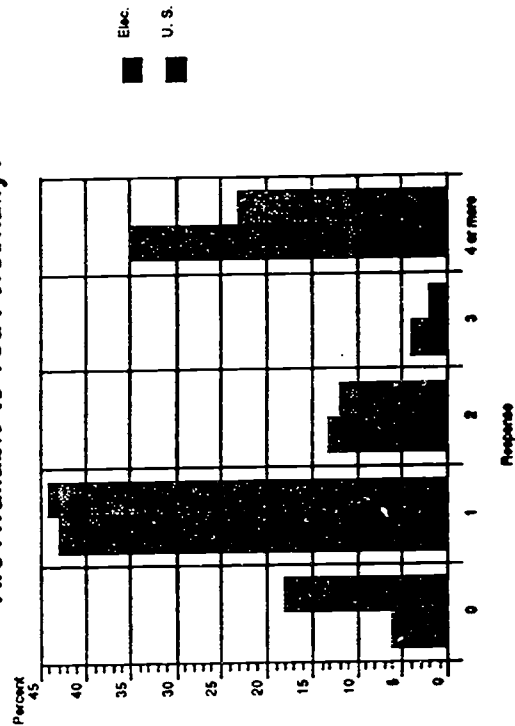
How Many Months Have You Used the Internet?



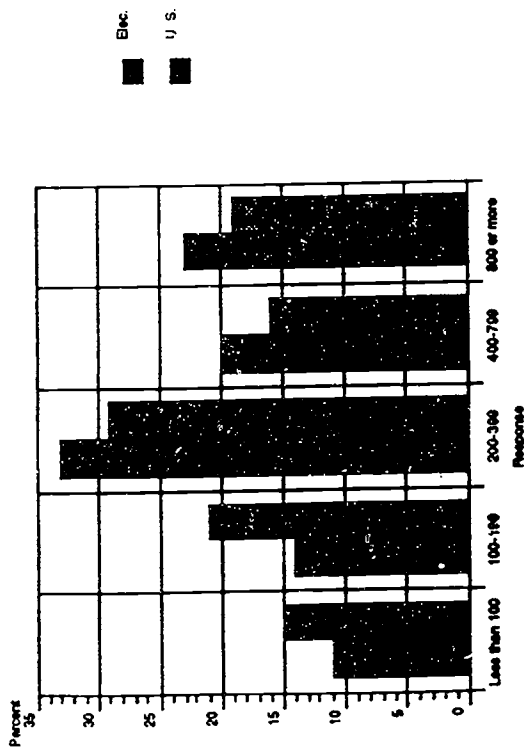
How Is Your Building Connected to the Internet?



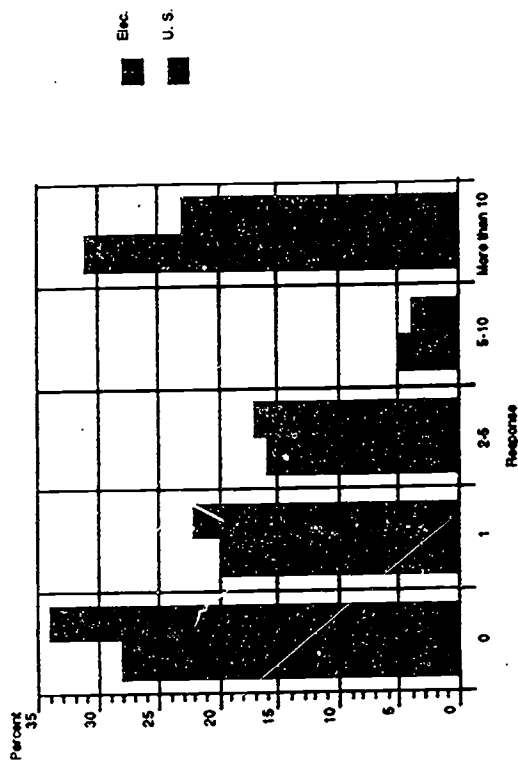
How Many Internet-Connected Computers Are Available to You Personally?



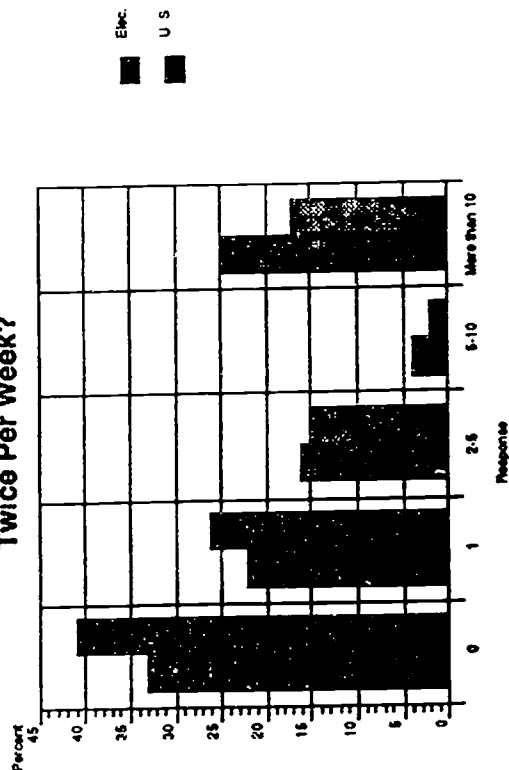
How Many Students Are in Your Building?



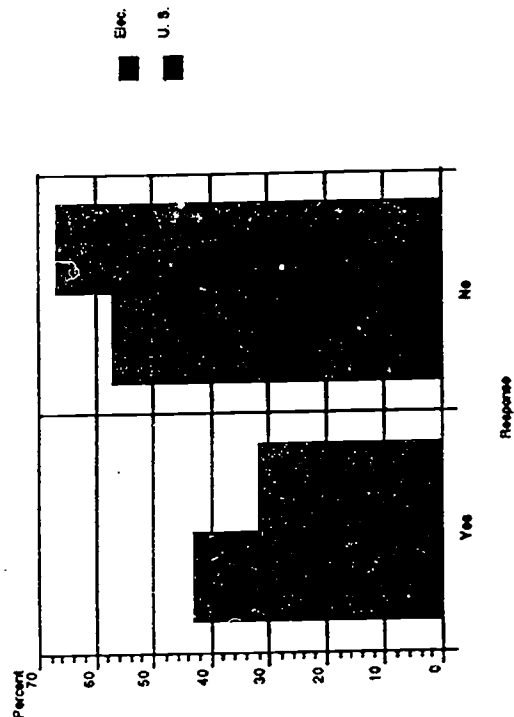
How Many Internet-Connected Computers Are Available to Students?



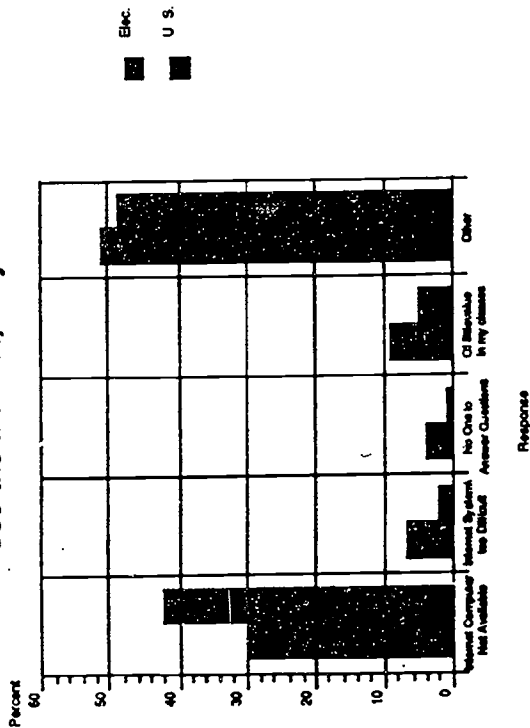
Of the Internet-Connected Computers, How Many Are Available to Your Students Twice Per Week?



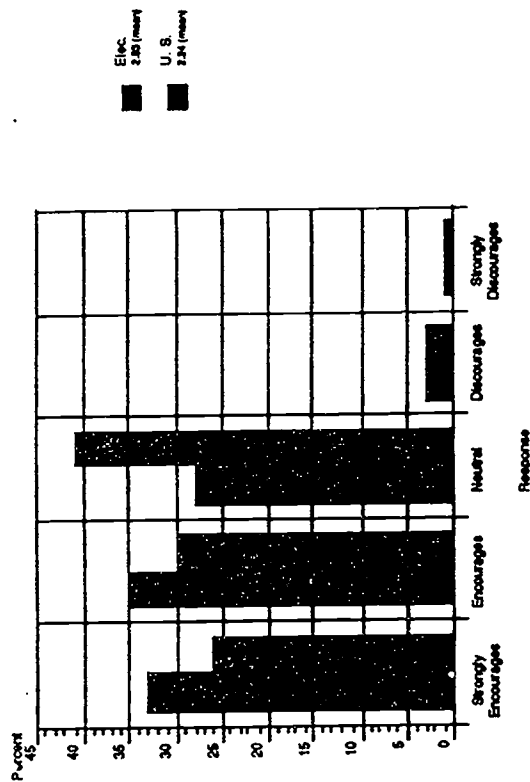
Have You Had Your Students Use the Internet?



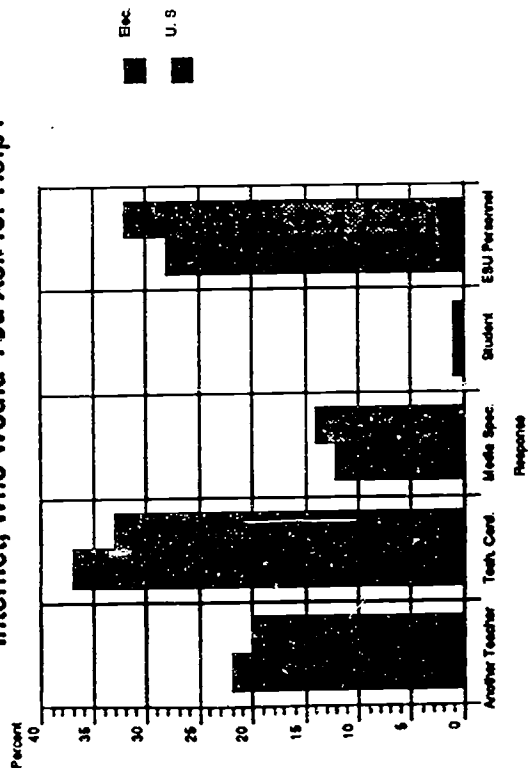
If You Have Not Had Your Students Use the Internet, Why Not?



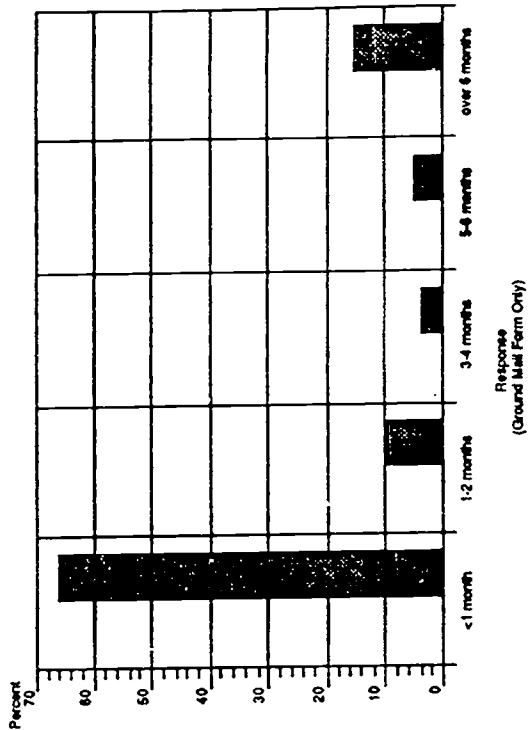
Principal's Support of Student Internet Use



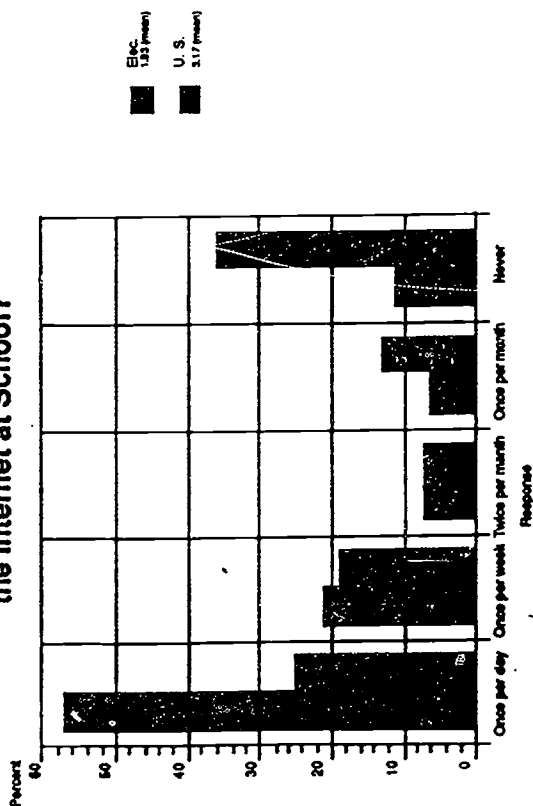
If You Had Questions About Using the Internet, Who Would You Ask for Help?



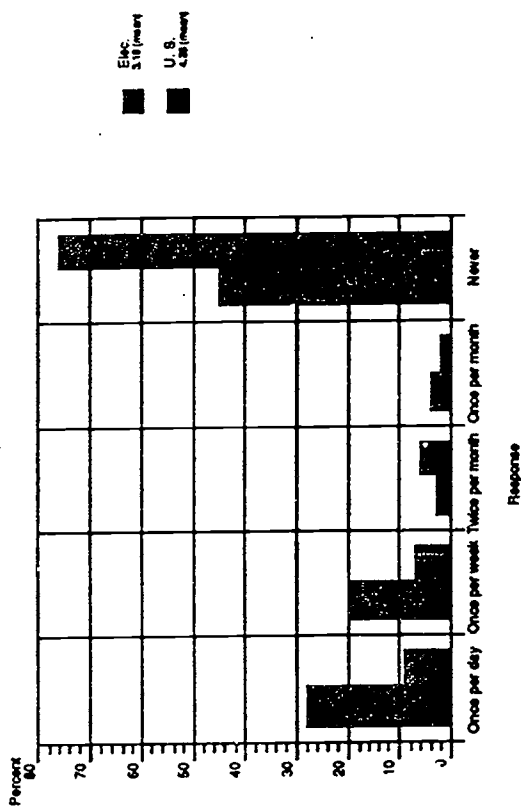
How Long Ago Did You Last Use the Internet?



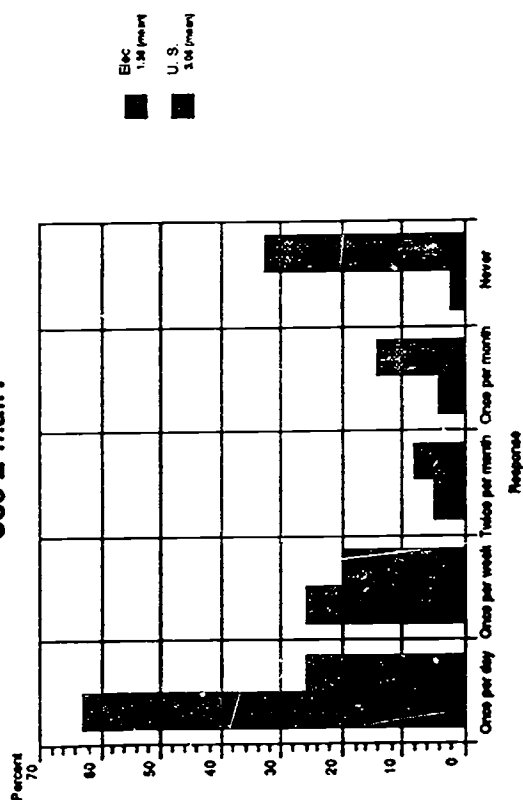
How Often Do You Personally Use the Internet at School?



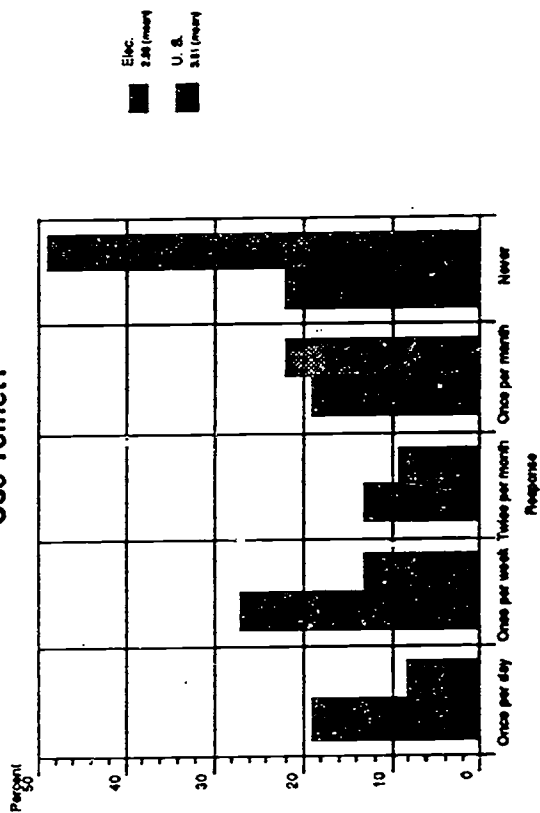
How Often Do You Personally Use the Internet at Home?



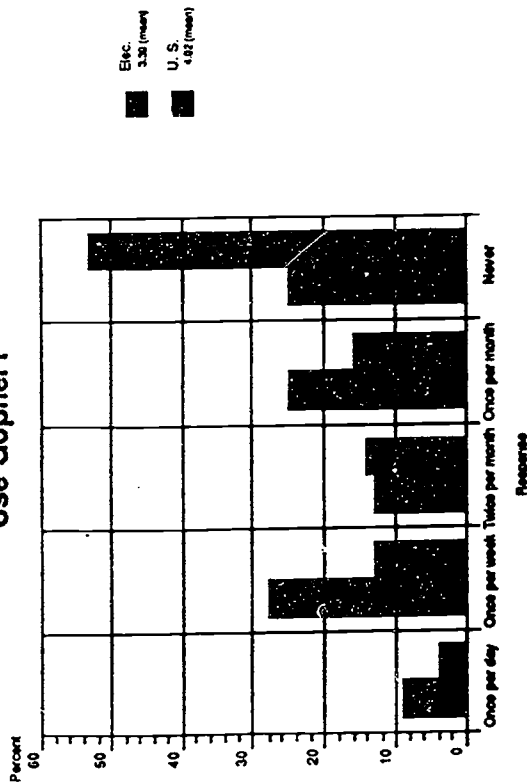
How Often Do You Personally Use E-mail?



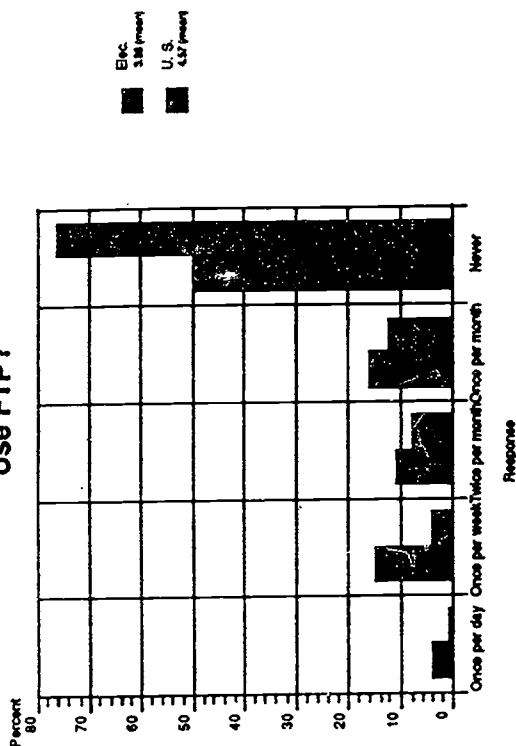
How Often Do You Personally Use Telnet?



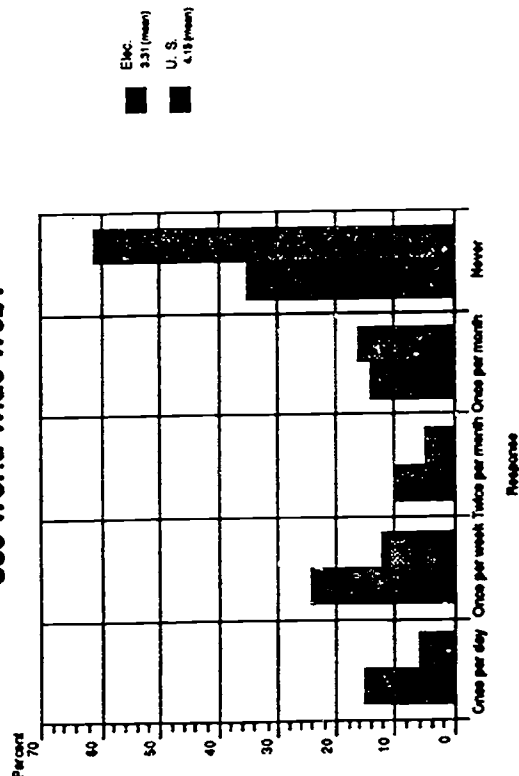
How Often Do You Personally Use Gopher?



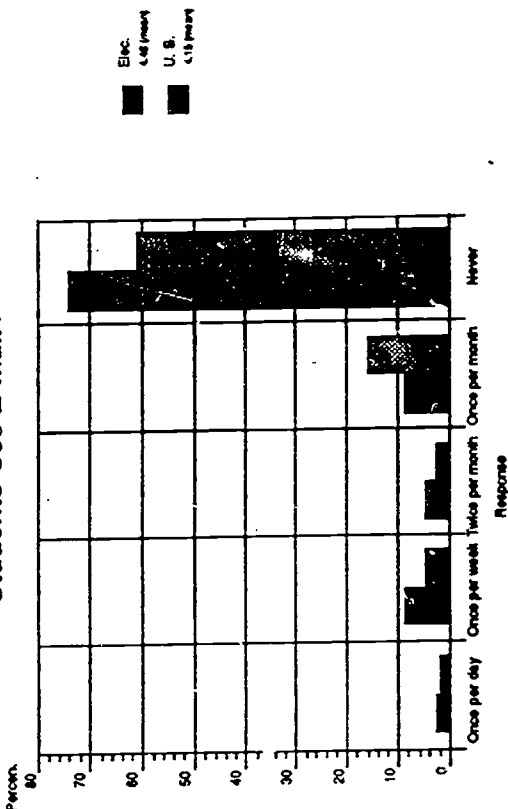
How Often Do You Personally Use FTP?



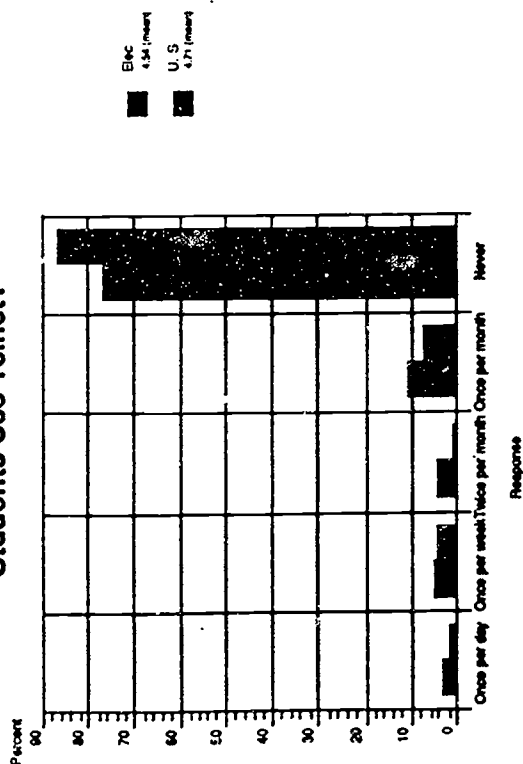
How Often Do You Personally Use World Wide Web?



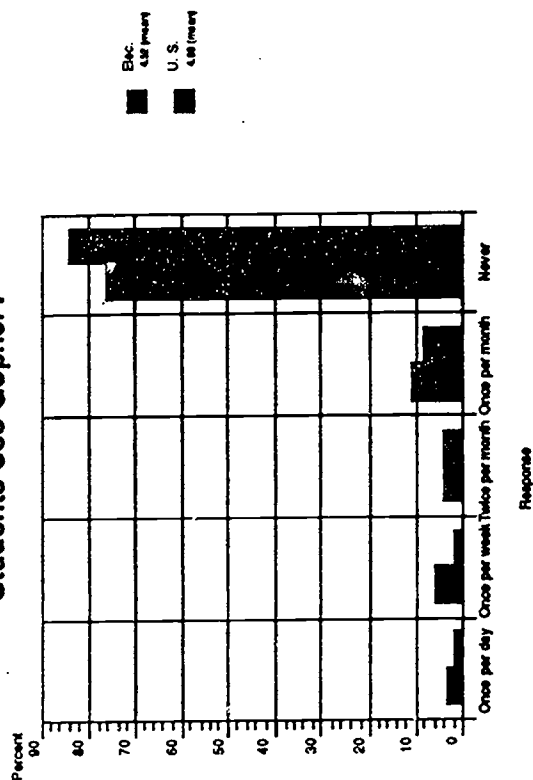
How Often Do You Have Your Students Use E-mail?



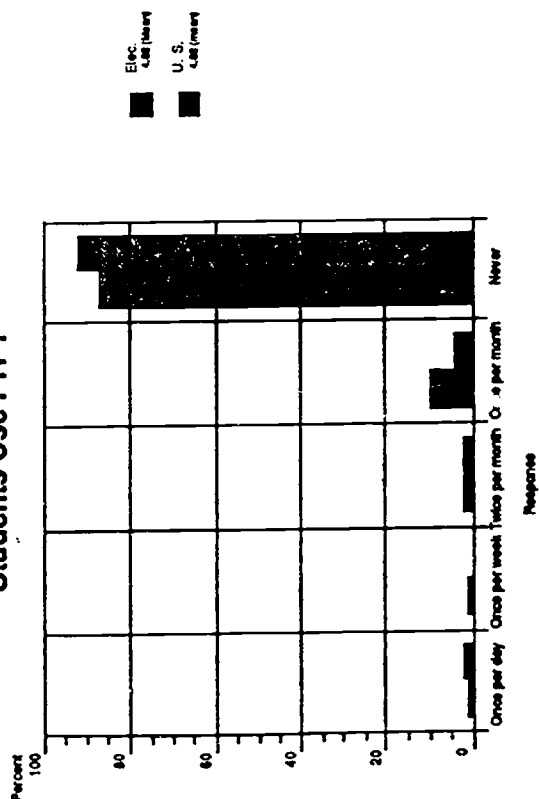
How Often Do You Have Your Students Use Telnet?



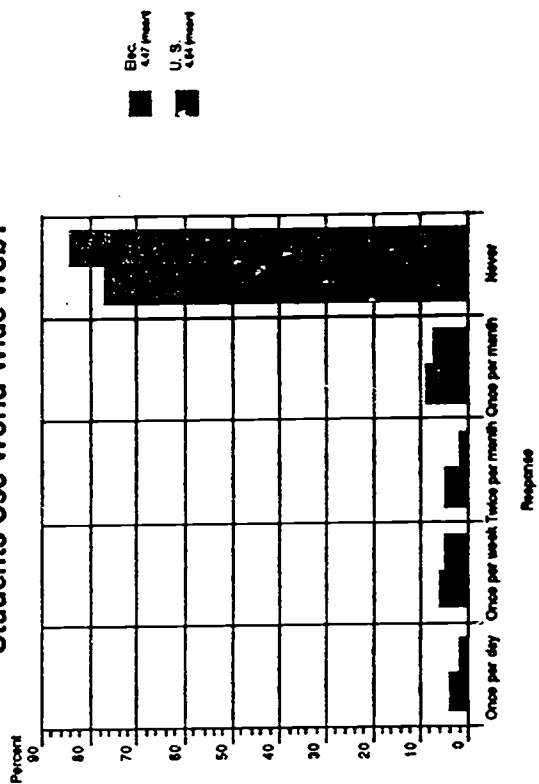
How Often Do You Have Your Students Use Gopher?



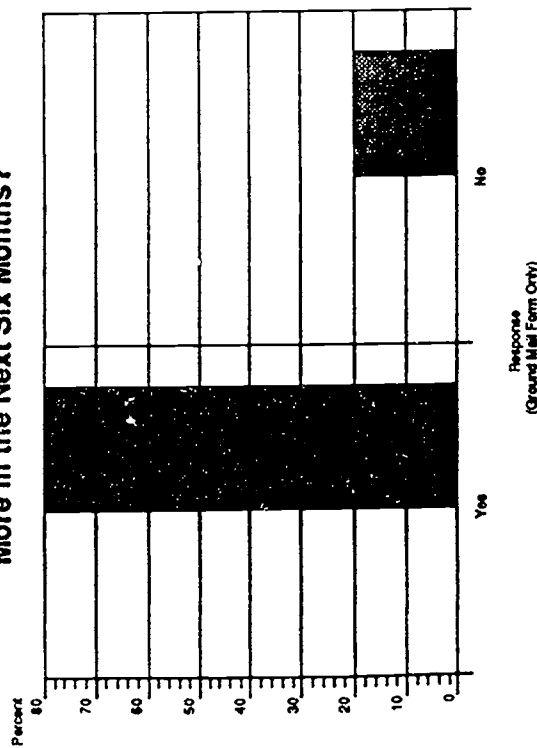
How Often Do You Have Your Students Use FTP?



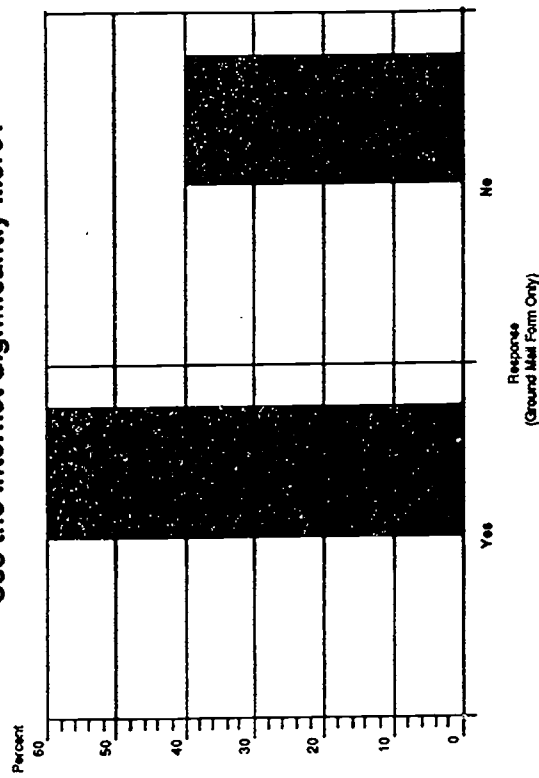
How Often Do You Have Your Students Use World Wide Web?



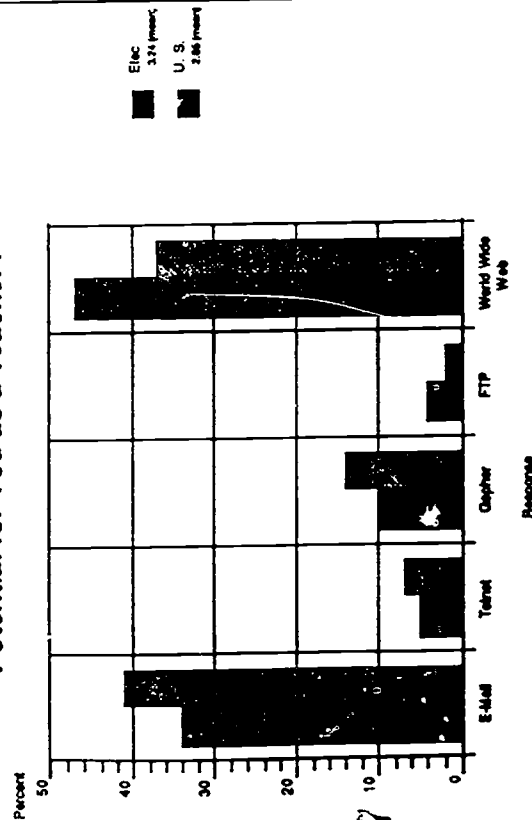
Do You Plan on Using the Internet More in the Next Six Months?



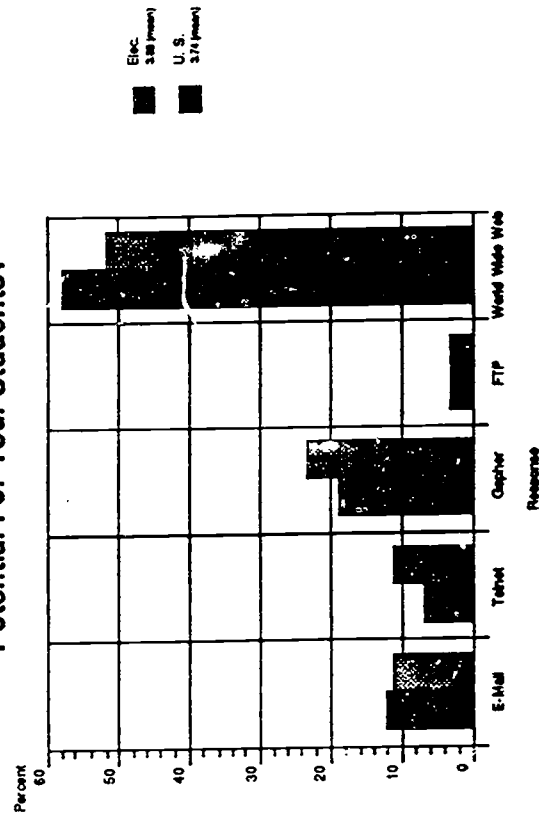
Do You Plan on Having Your Students Use the Internet Significantly More?



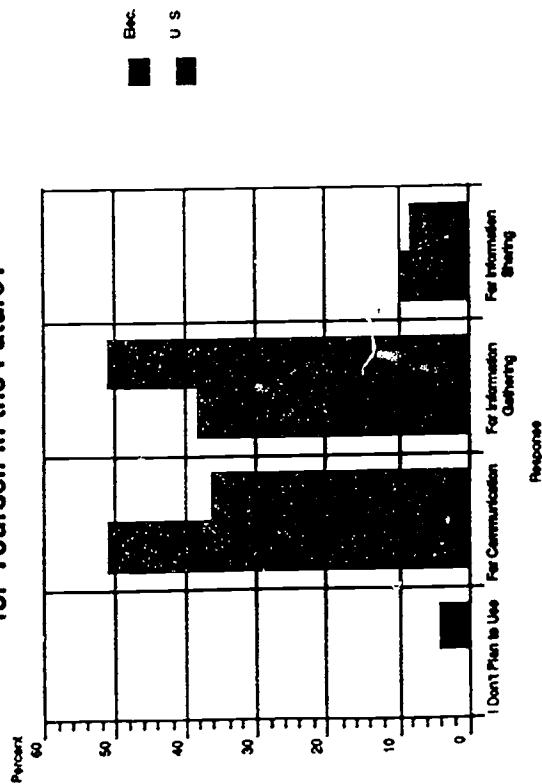
Which Internet Application Has the Most Potential for You as a Teacher?



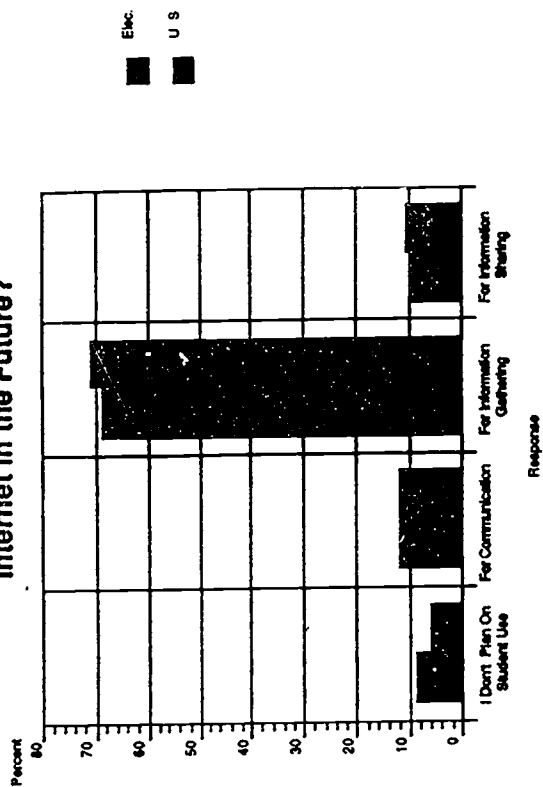
Which Internet Application Has the Most Potential For Your Students?



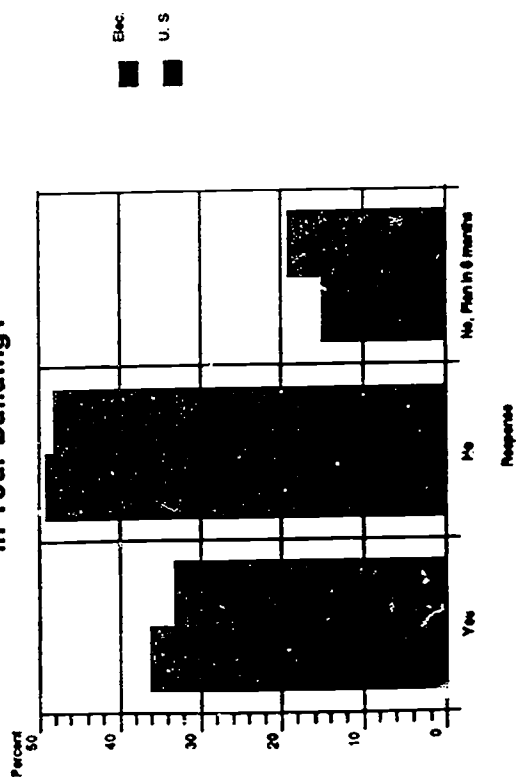
How Do You Plan To Use the Internet for Yourself in the Future?



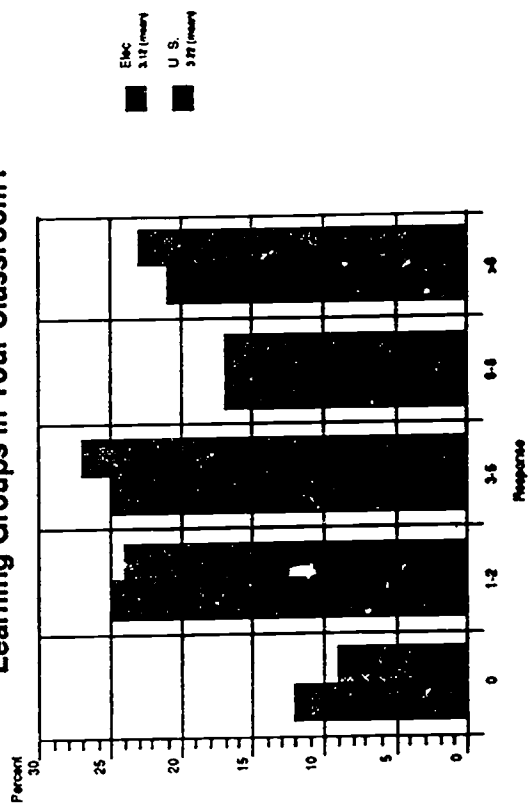
How Will Your Students Use Internet in the Future?



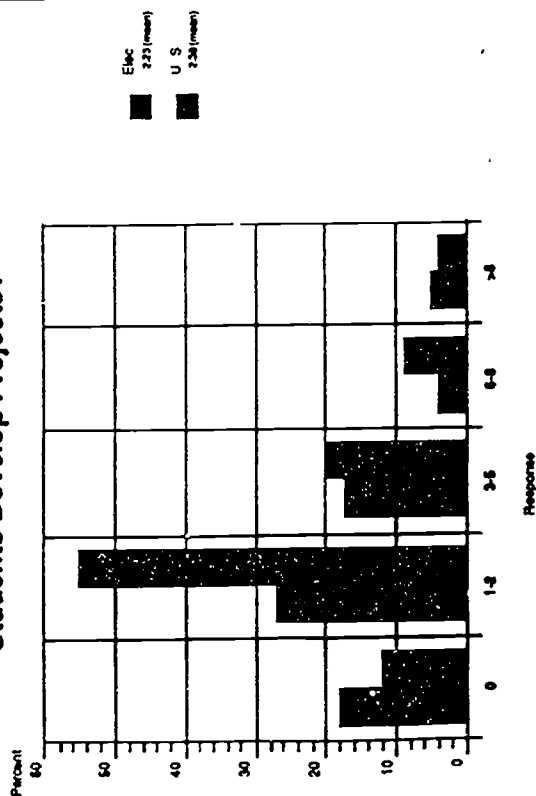
Do You Have a World Wide Server in Your Building?



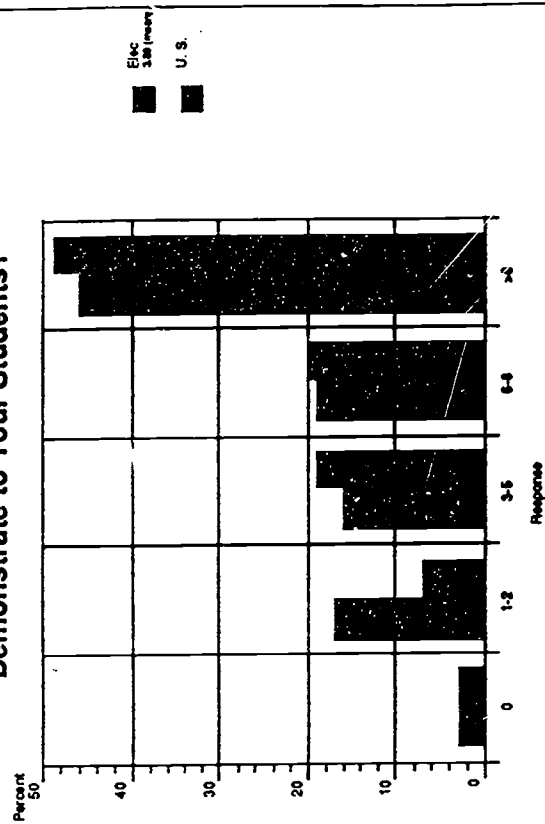
How Often Do You Use Cooperative Learning Groups in Your Classroom?



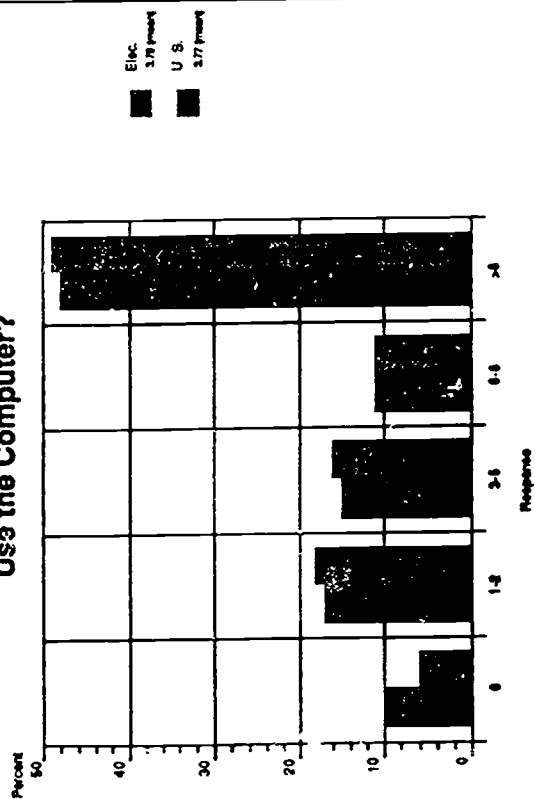
How Often Do You Have Students Develop Projects?



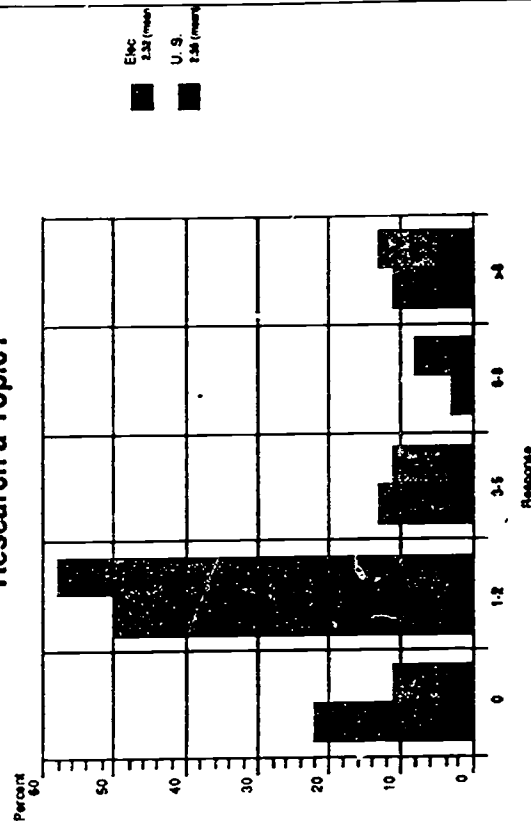
How Often Do You Lecture or Demonstrate to Your Students?



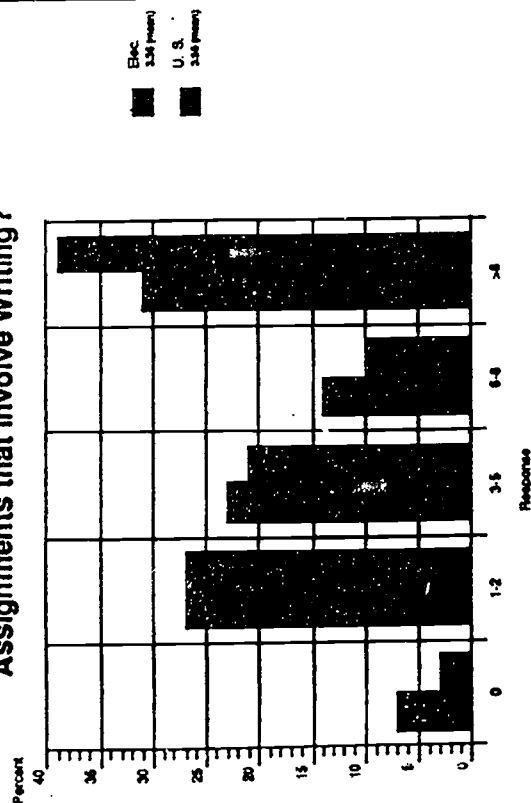
How Often Do You Have Students Use the Computer?



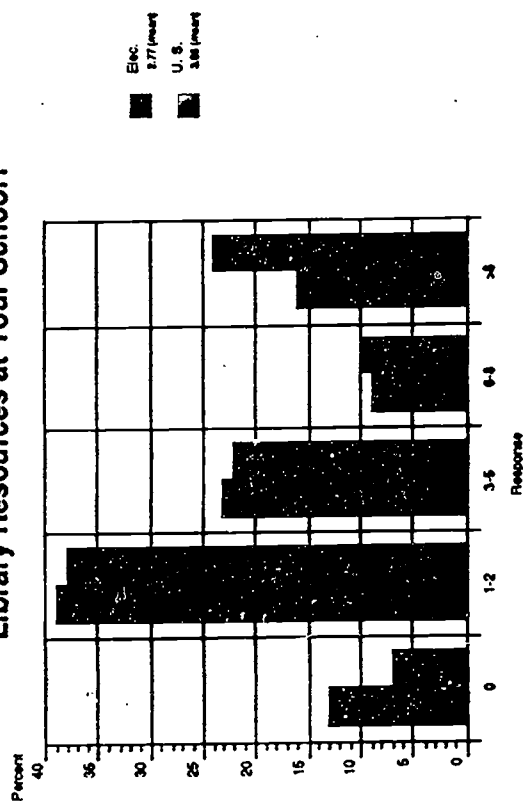
How Often Do You Have Students Research a Topic?



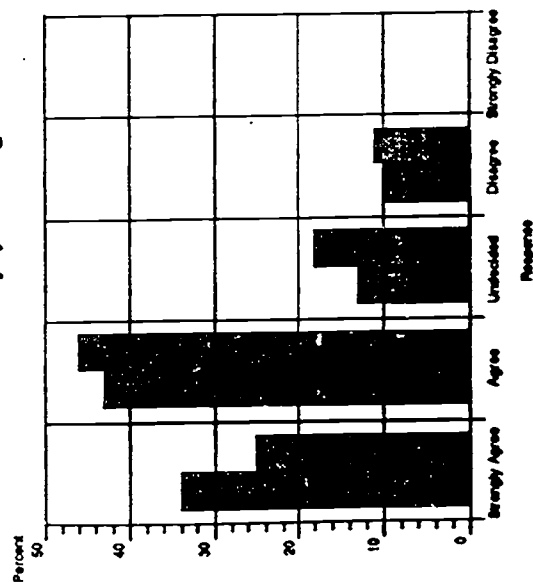
How Often Do You Give Students Assignments that Involve Writing?



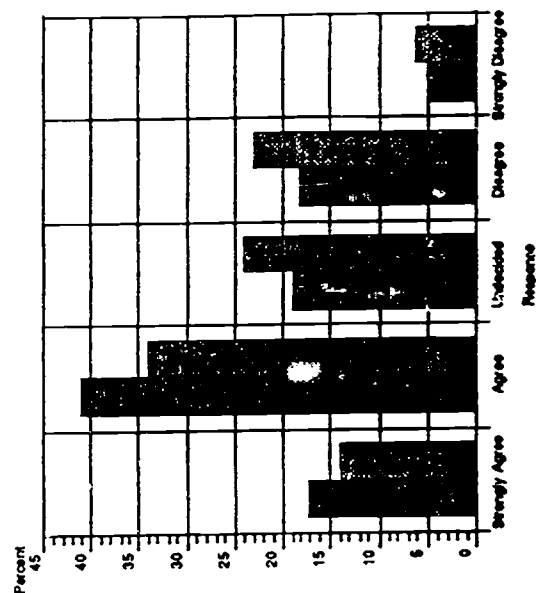
How Often Do You Have Students Use the Library Resources at Your School?



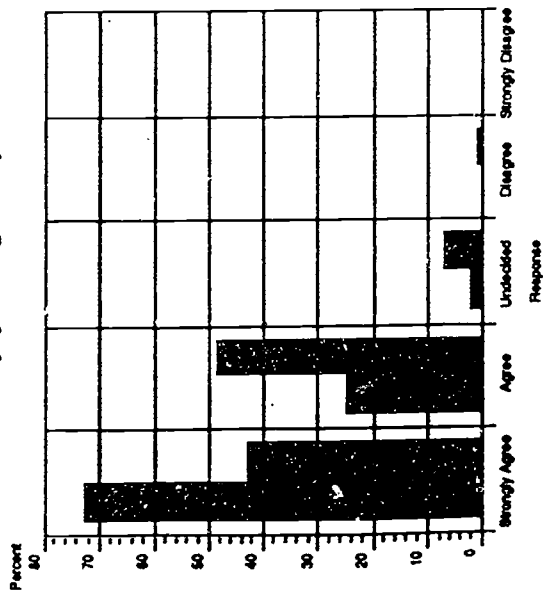
I Enjoy Writing



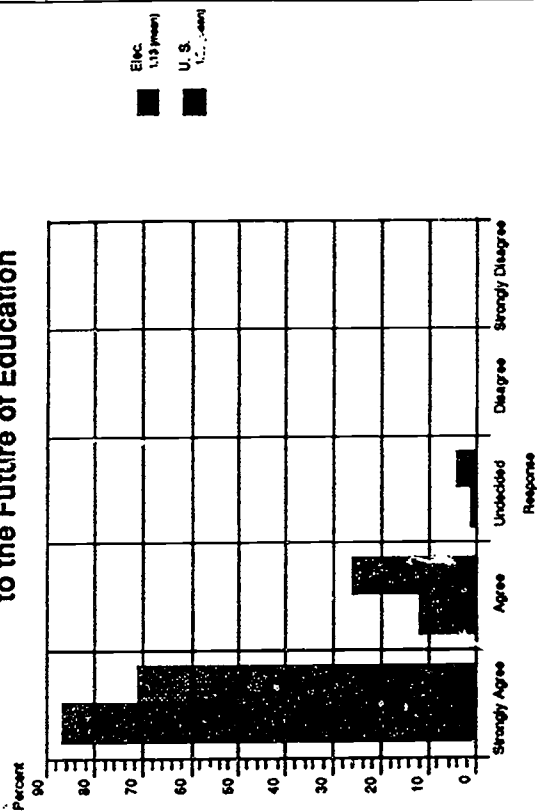
I Enjoy Speaking in Public



I Enjoy Using Computers



Computers Are Very Important to the Future of Education



Appendix F

Internet Coordinator's Data Request



University of
Nebraska at
Omaha

Teacher Education Department
Omaha, Nebraska 68182-0163
(402) 554-3666

May 30, 1995

Dear _____,

The evaluation process for the statewide Internet activities, as contracted by the Nebraska Educational Service Units, is proceeding nicely, and you will soon be receiving our third six month report at the end of July. As part of that report, we would like to ask you, as the Internet coordinator at your particular ESU, a few questions related to the Internet activities and growth of your area. As with all our data, your responses will only be reported as part of the statewide totals described within our report, and not as individual ESU. We are requesting some of the information as a "double-check" for our other sources, and for other information, your response will be the primary source. You may estimate this information, although we hope that you will try to be as accurate as possible.

Please answer the questions directly on the letter below, and return it with the enclosed envelope as soon as possible. We would of course be happy to answer any questions that you have regarding this request. We are pleased that the evaluation process that you hired us to do is proceeding on schedule, and that so much is happening in Nebraska related to the Internet. Thank-you very much for your assistance, and we look forward to our further collaboration in the future.

Sincerely,

Neal Grandgenett, Ph.D.
University of Nebraska at Omaha
Omaha, Nebraska 68182

Neal Topp, Ph.D.
University of Nebraska at Omaha
Omaha, Nebraska 68182

Survey completed by: _____ (only used for follow-up clarification)
On behalf of ESU(s) _____

Please answer the following questions:

- 1) Approximately how many "users" is your system currently supporting? _____
(as either formal account holders or individuals estimated to be accessing direct connections)
- 2) Approximately how many schools are "directly connected" in your area? _____
(exclude any schools where modem access is their only access)
- 3) Approximately how many other schools plan to be "directly connected" within the next year? _____ (exclude schools from #2, we understand that this will be a "rough" estimate)
- 4) Approximately how many "individuals" have gone through the Internet training sessions that your ESU is supporting? _____ (since training sessions began)
- 5) What "barriers" or "issues" are confronting your area/ESU in the use of Internet?
- 6) Any other comments? (use back side of page for more room if necessary)

Appendix G

Innovative User Electronic Mail Protocol

Interview questionnaire

To be used with data form

Hello, I'm <your name here> and I'm calling from the University of Nebraska at Omaha's Office of Internet Studies. We understand that you (and some of your colleagues) are doing some exciting things with Internet in your school. We'd really like to know more about how you are infusing the internet into education. We would greatly appreciate it if you could spare a few moments to answer some questions about your Internet activity. We here at the Internet Studies Office hope to share your innovative ideas with other Nebraska teachers and also incorporate your success into some research we are doing about education and Internet use in Nebraska. We first need to know some demographic information about you, your students and your school.

A. Your school's full name is.....?

B. And your school is in.....?

C. How many students attend your school?

D. How many teachers were involved in the internet project?

What were their full names and what grade level do they teach?

E. What was/were the grade level of the students involved?

F. Is your school direct connected or do you access the internet via modem?

Thanks! Now, I'd like to ask you about the activity itself.

G. What subject area did the activity incorporate?

H. Getting more specific, what particular topic(s) was/were covered in the activity?

I. What was your activity like? In other words, what did you and/or the students actually do to use the internet

J. What would you say were the most positive aspects of the activity?

K. What part would you describe as negative or a limitation of the activity?

L. What are your thoughts about what students are learning by using the internet?

M. Do you plan to try other activities?

We really appreciate your input and are excited to hear about innovative teachers using the internet. Thanks for your time, we hope to hear from you in the future!

Appendix H

Innovative User Interview Protocol

Interviewer's Name:	Date:
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Teachers Using the Internet

Interview Form

Demographic Information

A. Name of School/Institution		
B. School Location		
C. Approximate Size of School	# of students	
D. Teachers Involved in internet use (by name and grade level)	Name(s)	Grade Level(s)
E. Grade level of the students involved?	Grade Level(s)	
F. Direct connected or Modem?		

Description of Activity

G. Subject area (s) of activity	
H. General topics covered	
I. Brief description of the project.	
J. Positives of project.	
K. Negatives of project.	
L. Teacher's perceptions/comments	