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Perceptions about Internet Use by Teaching Faculty at Small Christian Colleges and Universities

Jessie Lennertz
(Taylor University, U.S.A.
jessie.lennertz@tayloru.edu)

Abstract: This study investigated the self-reported effects of Internet use on faculty at small Christian colleges and universities by age, years of Internet use, academic field, and on faculty communication style, teaching style, personal productivity, fulfillment of the organization's mission, social networks, research, and professional development. Findings: Faculty believed that their communication had changed and that they can communicate with others more quickly, get faster replies to questions, and obtain more relevant data. Faculty disagreed that their teaching style had changed and that they had changed the way they conduct a class. Faculty believe that their productivity has changed. Most faculty disagreed that the Internet has made them more comfortable sharing their feelings about God. Faculty believe that the Internet has changed the type of jobs and the way students look for jobs; that there are fewer barriers to joining an electronic group, and that the volume of people they keep in frequent touch with has increased. Most faculty agreed that the way they do research has changed and that the Internet makes it easier to get information about advances in their fields. Faculty disagreed that the Internet could be substituted for conferences and that the Internet has made it possible for them to serve on boards.

Key Words: Internet, faculty, communication, professional development, personal productivity, research, social networks, teaching, mission.

Categories: A.1, K.4.2, K.4.3.

1 Introduction

The use of information and communication technology is growing rapidly in colleges and universities as it is in the business world. One technology whose use is perhaps growing most rapidly of all is the Internet. The Internet by its nature provides access to a wide variety of data in many different formats produced by people of widely varying interests and goals from many sources located around the world [Krol 1992; Krol and Hoffman 1993; Wiggins 1995]. The sheer volume of information available may also affect the faculty and students because of the time it takes to find desired resources.

Colleges and universities are in the business of education, not technology, and their primary resource is their faculty. Faculty are using the Internet in increasing numbers, but there is no clear indication yet about the impact of Internet use on faculty teaching, research, communication, professional development, personal productivity, social networks, and the way they fulfill their organization's mission [Barboni and Lucas 1993, p. 5].

This study is concerned with the effect of the Internet on faculty teaching, research, professional development, personal productivity, social networks, communication, and fulfillment of the educational institution's mission.

2 Review of Literature

There is little research that explicitly examines the impact of the Internet on education [Silva and Cartwright 1993, p. 7]. Two studies have specifically probed faculty use of the Internet. [Wang and Cohen 1998, p. 456] did a study of Internet use by university faculty and reported that 85% of the faculty used at least one of the Internet services. They also found that 45% of the faculty surveyed were between the ages of 41 and 50, that 96% of the faculty used electronic mail, 55% used the World Wide Web, and 48% used Gopher. Approximately half the faculty had Internet access at home.

In a study of Australian faculty, [Lazinger, Bar-llan, and Peritz 1997, p.513] found that "More than half (57%) of the 273 respondents to the question on general influence replied that they conduct research with distant colleagues via the Internet...and that they use the telephone less...as a result of Internet use." [Lazinger, Bar-llan, and Peritz 1997] also reported that [Chu 1994] found a positive relationship between electronic mail use and speciality and a negative correlation between age and the use of electronic mail [p. 509].

These studies leave some major questions unanswered. Wang and Cohen looked at which Internet services were used by faculty but not at faculty opinions about how Internet use affected them. Lazinger, Bar-llan, and Peritz covered only a narrow range of Internet uses and also failed to probe faculty perceptions about Internet use.

The Internet offers various opportunities for information access and information sharing which are affecting faculty members' work and personal lives. The following section discusses how various authors view these opportunities and the social and economic effects and ethical issues arising out of Internet use by faculty.

2.1 Communications

Electronic discussion groups for almost any discipline are available via the Internet. These discussion groups can facilitate the rapid exchange of information, ideas, and opinions [Silva and Cartwright 1993, p. 9; Ashley 1992, p. 158].

Some researchers believe electronic journals might provide ways to facilitate informal communication processes so that original ideas can be generated and refined, and through which preliminary information about research is disseminated [Harrison, Stephen, and Winter 1991, p. 1]. However, different disciplines apparently have different social practices, so this technique might not work for all disciplines [Harrison, Stephen, and Winter 1991, p. 26].

Many news organizations are disseminating international, national, local, and specialized news using the Internet. This can allow people to read about events in foreign countries as easily as events in their native countries.

2.2 Professional Development

Electronic publishing and electronic books provide easy access to the text of articles or entire books for research or classroom use [Sanchez 1995, p. 58]. Many graphics or sound files can be copied electronically, played, or printed and used for teaching or research resources or for professional development. In some fields the most current information is distributed electronically.

There are some hazards for authors in electronic publishing. The issues of who owns the rights to electronic versions of books, articles, and pictures, whether royalties should be paid, and, if so, how much royalty to pay, are big concerns with many authors and publishers today [Berner 1994, p. 2; Reed 1995, p. 91]. The publication of articles in electronic journals is still not widely accepted as demonstrating scholarship by many academic institutions [Burnett 1993, p. 1; Green 1997, p. 2].

2.3 Social Communities

Students need to "inhabit the relevant community" and get to know the real questions and why they matter [Brown and Duguid 1996, p. 13]. Knowledge communities are built on continuous conversation and interactivity which is now possible even with some participants at a distance by using newer technologies such as Multi-User Dimensions (MUDs), Object Oriented MUDs (MOOs), listservs, and annotation systems which allow participants to post and read questions and comments about documents [Brown and Duguid 1996, p. 15].

2.4 Research

The ability to search electronically the catalogs of various libraries is valuable to faculty for research or teaching resources. On-line search software can facilitate faculty use of these resources [Harrison, Stephen, and Winter 1991; Silva and Cartwright 1991]. Library access through computer networks can be vital to some people who had previously been denied the use of a library because of their handicaps [Coombs 1990, p. 43].

"Security is necessary to keep valuable data from being erased, changed, plagiarized, or destroyed by disaster. Privacy is needed to protect personal information concerning faculty and students from being misused or erased" [Johnson 1991, p. 1]. Copyright and Fair Use issues are becoming more complex as the Internet allows easy access to a variety of material.

2.5 Shifting Paradigms in Academia

[Bruce 1995] as reported by [Lazinger, Bar-llan, and Peritz 1997, p. 509], found that the Internet "represents [for academics] 'a mechanism for overcoming the disadvantages to academic teaching which may arise from...the under-representation of certain teaching disciplines in Australian Universities' "[p.191].

The Executive Strategies Report Number 3 [HEIR 1993, p. 1] describes the major impact of networking on campuses as occurring in the area of interpersonal communications, but having the ability to foster a student-centered learning environment where faculty act more like coaches than lecturers. This would be a major change in the way instruction is delivered and the way faculty work.

"A new paradigm, consistent with emerging models of Web-based instruction [Kirkley and Boling, 1995; Norman and Spohrer, 1996], is required to change the focus from content-centered to problem-centered learning. This paradigm--the *Digital Learning Environment*--incorporates" many features, including a learner-centered and problem-based (rather than content-centered) instructional support system, and a blurring of teacher and student roles [Siegel and Kirkley 1997, p. 264].

[Crossman 1997] said "As an instructional technology, the Web is unique in its ability to not only carry a variety of media, but to do so from virtually anywhere..." [p. 22].

Plater believed that colleges and universities will no longer have a monopoly on learning at postsecondary levels [Plater 1995, p. 24]. Managing the learning process, student assessment, and student interactions "could well be the biggest challenges faculty face regarding their time and personal coherence" [Plater 1995, p. 30]. Plater said, "In the new environment, universities have to recognize faculty and administrative time and talent as their most important resource" [p. 32].

Kevin [Kelly 1997] describes the new economy as a Network Economy where goods and services become more valuable as they proliferate, for example fax machines. Kelly also said "…in the Network Economy, where machines do most of the inhumane work of manufacturing, the task for each worker is not 'how to do this job right' but 'what is the right job to do?' In the coming era, doing the exactly right next thing is far more 'productive' than doing the same thing better…[but] it will be invisible to productivity benchmarks" [p. 197]. By necessity it appears that the educational process must change too. Distance learning and web-based instruction appear to be growing to meet the new needs of learners in the Network Economy.

2.6 Background Information

The history of the Internet and its resources are described in some detail by [Calcari 1994]; [Kantor and Newbarth 1994]; [Krol 1992]; [Marine, Kirkpatrick, Neou, and Ward 1993]; and [Tennant, Ober, and Lipow 1993]. The Internet began in 1969 with the purpose of providing efficient communication between different types of computers over a large geographic area to keep the U.S. communication infrastructure up and running in the event of a nuclear war [Kantor and Neubarth 1994]. USENET (established in 1979) uses electronic conferences or news groups to exchange information

[Krol 1992; Tennant, Ober, and Lipow 1993]. The World-Wide Web (WWW) was developed in 1992 to organize information on the Internet and any local information you want. It uses a technology called hypertext, which "is a method of presenting information where selected words in the text can be 'expanded' to provide more information about the word" [Krol 1992, p. 228].

2.7 Definitions

For the purpose of this study the following definitions apply:

Faculty: Full time teaching faculty members.

Internet: All services and resources that are available through the use of the Internet network. Examples include electronic mail, file transfer protocol, and access to the World Wide Web.

Internet user: Someone who claimed to use any Internet services at least occasionally. The users in this study are full-time teaching faculty members at some of the small Christian colleges in the United States and Canada.

Christian college: Members of the Coalition of Christian Colleges and Universities (90 members).

3 Methods and Procedures

3.1 Research Design

This study used a combination of qualitative and quantitative methods. [Brannen 1992] and [Borg and Gall 1989] point out the value of using qualitative techniques where research issues are not clear-cut and where respondents' replies are likely to be complex, discursive, and grounded in the culture of the organization. [Krueger 1988] espouses using focus groups for gathering opinions of a variety of people in instances where not much is known about the subject.

3.2 Population

The population for this study is Internet-using faculty who teach at Internet-connected small Christian colleges and universities that are members of the Coalition of Christian Colleges and Universities (CCCU). The choice of faculty at small, Christian colleges and universities (instead of including large research or public universities) was made because these organizations tend to have a more cohesive organization and a more focused value system and mission, therefore changes grounded in the organization, value system, and mission which affect faculty are more likely to be noted. Faculty are not generally required to do research, but their teaching load is usually 12 credit hours per semester.

3.3 Sample

The qualitative research portion was conducted using 23 volunteers in focus groups. For the telephone interviews, twenty schools belonging to the CCCU were randomly selected and four teaching faculty members were randomly selected from each of the 20 organizations. The number of schools who, when selected, did not have Internet access is reported in the Findings section.

The selected faculty were asked if they use any Internet services. Faculty described themselves as Internet users or non-Internet users. If they did not use the Internet, they were still asked to respond to the Basic Information Questionnaire. If they did use any Internet services, they were asked to respond to the Basic Information Questionnaire and the Data Questionnaire.

Faculty who participated in the survey had a mean age of 44.63. Those who did not participate in the study had a mean age of 48.72 (Table 1). The sample means were significantly different (t = -2.42, df = 131, p = .017). On average, non-participants were about four years older than participants.

	Mean Age	S.D.	df	t-value	Sig. Level (2-tailed)
Participants	44.63	9.74	131	-2.42	.017
Non-participants	48.72	9.24			

Table 1. T-test of Age by Years Internet Used for Participants and Non-participants

The ages of participants and non-participants were recoded into decade categories (20-29, 30-39, 40-49, 50-59, 60-69), and Figures 1 and 2 show histograms of the age decades represented in the participants and non-participants to the study. Of the fifteen academic disciplines listed on the questionnaire only thirteen were represented by faculty participating in the study. The fields of Agriculture and Other were not represented.

When considering whether or not the participants and non-participants differed by academic field, a Chi-square analysis was performed (Chi-square = 13.483, df = 13, p = 0.411). Conclusion: The two groups were not significantly different with respect to their academic fields (Table 2). The number and percent of faculty in the various academic disciplines is shown in Table 3 for survey participants and Table 4 for non-participants. Although the participants were younger, they were generally distributed among the same academic fields proportionally as the non-participants. The sample appears to be representative of the population in this respect.

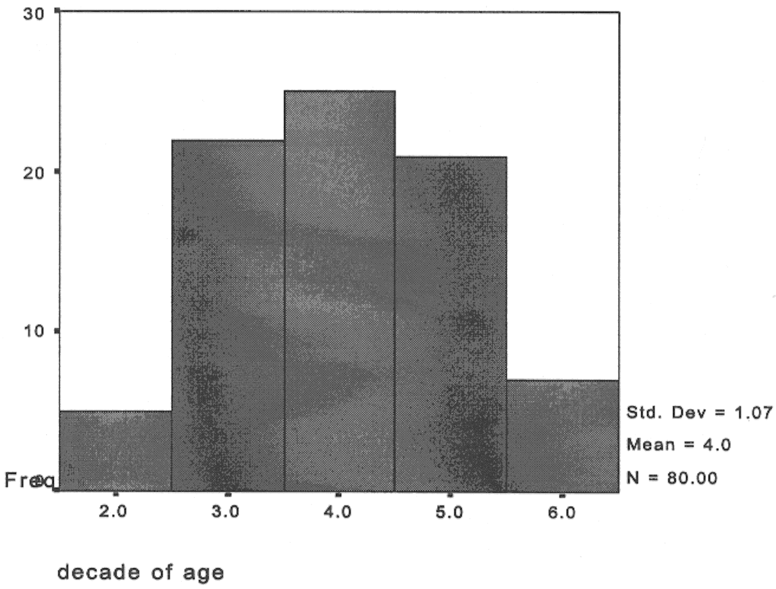

Figure 1. Age of Participants by Decade

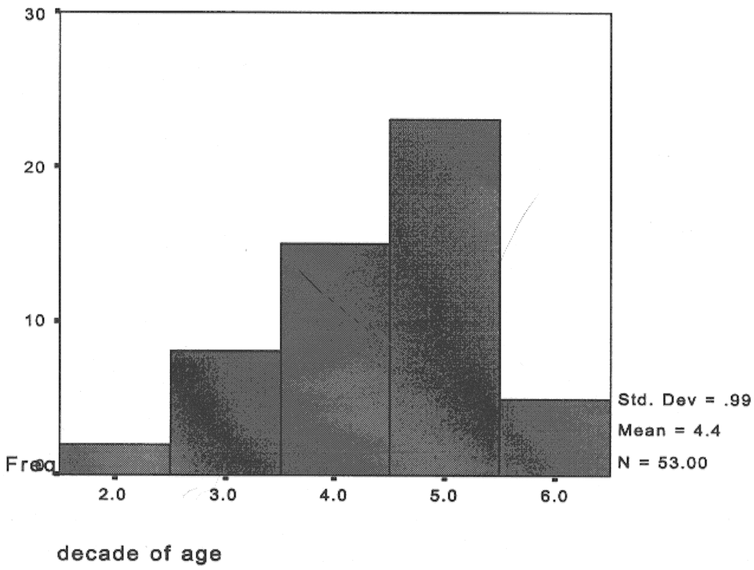

Figure 2. Age of Non-Participants by Decade

	N	Chi-Square	df	p
Participants	80	13.483	13	0.411
Non-participants	56			
Total	136			

Table 2. Chi-square of Academic Field for Participants and Non-participants

Academic Discipline--participants	**Frequency**	**Percent**
Biological Science	4	5.0
Business	9	11.3
Education	8	10.0
Engineering	1	1.3
English	7	8.8
Fine Arts	5	6.3
Health-related	4	5.0
History/Political Science	6	7.5
Humanities	13	16.3
Mathematics/Statistics	2	2.5
Other Technical	4	5.0
Physical Science	6	7.5
Social Science	11	13.8
Total	80	100.0

Table 3. Academic Disciplines Represented by Participants

3.4 Instrument Development--Focus Groups

3.4.1 Procedure

Basic information collected from all faculty was:

- Name of college or university (from which the Carnegie classification was determined),
- academic field (categories from Higher Education Research Institute),
- age
- number of years Internet has been used
- primary use of Internet (teaching, research, or personal communication).

Academic Discipline--non-participants	**Frequency**	**Percent**
Biological Science	1	1.6
Business	5	7.9
Education	4	6.3
English	9	14.3
Fine Arts	7	11.1
Health-related	4	6.3
History/Political Science	3	4.8
Humanities	9	14.3
Mathematics/Statistics	4	6.3
Other	1	1.6
Physical Science	1	1.6
Social Science	8	12.7
Total	56	100.0

Table 4. Academic Disciplines Represented by Non-participants

Focus group meetings were held at four small Christian colleges and universities located in the Midwest. The questions asked at the group meetings explored the perceived effect of the Internet on faculty in seven broad categories: communication style, teaching style, personal productivity, fulfillment of the organization's mission, social networks, research, and professional development. The seven categories were developed from references in the literature and from conversations with faculty who use the Internet at Taylor University. Information was also collected on the age group of the faculty person, the number of years (s)he has used the Internet, the academic discipline (s)he represents, and whether the person's primary use of the Internet was for teaching, research, or personal communication. After a pilot test at Taylor University, focus groups were conducted at Huntington College (Indiana), Indiana Wesleyan University (Indiana), and Cedarville College (Ohio). The responses were analyzed and a list of questions generated for the telephone interviews. The questions were constructed and the telephone interviews conducted following the guidelines described by [Miller 1991] and [Dillman 1978].

3.4.2 Data Analysis

A total of 23 people participated in the four focus groups. They represented three age groups, with almost half being in the 40 to 49 age group, and twelve different academic fields. Internet use ranged from one to six or more years with eight people having used the Internet one year.

Content analysis was performed on the notes taken to identify main themes within each category. Most questions were formulated with a Likert scale allowing a limited number of response options: Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D), or Strongly Disagree (SD). A few questions were left open-ended to elicit unstructured replies. The questionnaire was pilot-tested with faculty at Taylor University.

3.5 Data Collection--Telephone Interviews

3.5.1 Statistical Analyses

Frequencies of participants and non-participants in the various academic fields were determined, as were the frequency of responses for the primary use of the Internet. The answers to some open-ended questions were analyzed for similarity of replies and the frequency of common replies is reported within each question.

A Chi-square test using all five answer categories failed because of low cell counts. The Likert scale survey answers were recoded to record Strongly Agree and Agree as Yes and Undecided, Disagree, and Strongly Disagree as No. Another Chi-square test was run using the recoded answer values and this test showed some significant results.

A Pearson product moment correlation was run to estimate the degree of linear relationship between age as the independent variable to number of years the Internet has been used as the dependent variable both for survey participants and non-participants. The result was not significant, so the ages of faculty were recoded into decades (20-29, 30-39, etc.). Then a one way Analysis of Variance (ANOVA) test was run to estimate the degree of relationship between age group (in decades) as the independent variable and the years of Internet use as the dependent variable. An ANOVA was also performed using academic field as the independent variable and the years of Internet use as the dependent variable.

A Spearman rank correlation coefficient was used to show the correlation between the survey answers and number of years the Internet has been used.

4 Findings

4.1 Telephone Interviews

Five classifications of educational institutions were represented in the study as reported in Table 5, grouped by Carnegie Classification. The purpose of reporting the Carnegie Classification is to show the type of institutions that participated in the study by a commonly accepted criterion. The type of college was necessarily limited, since the selection of sites was specifically small Christian colleges or universities. At the time these twenty colleges were selected (summer 1997) some colleges did not have Internet access. A total of 24 out of 90 schools were selected by random sampling. Four of the selected schools did not have Internet access available to their faculty, so these schools were not used in the study.

A total of 171 people were randomly selected from lists of names provided by the institutions. Eighty people who used the Internet were willing to be interviewed, 47% of the total. The remaining 91 people (53%) whose names were drawn were not candidates for the study for a variety of reasons. Sixty-three of these people didn't use the Internet at all. The remaining 28 people whose names were selected were no longer at the institution, had retired, were part time, were on sabbatical, or were not teaching faculty. (The lists of names were obtained in the summer of 1997, so the lists apparently used names from the previous school year.) The interviews were done in the fall and winter of the 1997-98 school year. Fifty-six of the 63 people who did not use the Internet provided information for the Basic Questionnaire, but seven people did not.

For survey participants, the primary use of the Internet was Personal Communication (59%) while Teaching (21%) and Research (20%) were almost tied. For the non-participants, the primary use of the Internet (assuming that they used it at all) was Personal Communication (54%), while Research (16%) was ranked second. Teaching gained a little over 1% of the vote with 16% of the non-participants giving no choice because they did not use it.

College	Carnegie Classification
Westmont College	Baccalaureate I
Anderson University	Baccalaureate II
Bethel College	Baccalaureate II
Bluffton College	Baccalaureate II
East Texas Baptist University	Baccalaureate II
Eastern College	Baccalaureate II
George Fox University	Baccalaureate II
Judson College	Baccalaureate II
King College	Baccalaureate II
Malone College	Baccalaureate II
Messiah College	Baccalaureate II
Milligan College	Baccalaureate II
Northwestern College	Baccalaureate II
Roberts Wesleyan College	Baccalaureate II
Southern California College	Baccalaureate II
Trinity Christian College	Baccalaureate II
Redeemer College	Canada
Seattle Pacific University	Master's I
Cornerstone College	Master's II
Point Loma Nazarene College	Master's II

Table 5. Educational Institutions Represented in the Study

4.2 Research Questions

4.2.1 Is there a relationship between the number of years of Internet use and the age of faculty?

The correlation between the age and the years of Internet use was not significant (r = -0.161). Because the Pearson product moment coefficient assumes a linear relationship between the variables, however, further analysis using analysis of variance (ANOVA) was used to identify the relationship between the variables. The age of participating faculty was recoded into decades and an ANOVA was performed with age group as the independent variable and number of years of Internet use as the dependent measure (Tables 6 and 7). There were no significant differences among the age groups (by decade) and years of Internet use (F = 1.38, df = 4, 75, p = 0.249).

Age Group	N	Mean	Std. Dev.
20-29	5	4.60	1.67
30-39	22	4.91	3.48
40-49	25	3.20	1.68
50-59	21	4.14	3.26
60-69	7	3.14	1.77
Total	80	4.00	2.77

Table 6. Mean Years of Internet Use by Faculty Age Group (In Decades)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	41.553	4	10.388	1.380	.249
Within Groups	564.447	75	7.526		
Total	606.000	79			

Table 7. Anova Summary for Years of Internet Use by Faculty Age Group

4.2.2 Is there a difference in the length of time Internet has been used by faculty in different academic fields?

For participants a one way ANOVA was run with academic field as the independent variable and the number of years of Internet use as the dependent variable. Prior to running this analysis the Engineering and Mathematics/Statistics fields were grouped into a combined category. There is no significant difference between the academic fields and the years of Internet use ($F = 1.77$, $df = 11, 68$, $p = 0.077$) (Tables 8 and 9). Although this result approached the .05 level, there were a number of groups with small n's, and therefore it would be unwise to draw conclusions from this data.

Age Group	N	Mean	St. Dev.
Biological Science	4	4.50	1.00
Business	9	5.11	4.23
Education	8	3.50	1.51
Engineering/Math&Stat	3	6.67	3.51
English	7	3.71	3.04
Health-related	4	2.50	2.38
History/Political Science	6	3.33	2.16
Humanities	13	3.00	1.63
Fine Arts	5	2.60	1.82
Physical Science	6	3.83	2.40
Social Science	11	4.09	2.07
Other Technical	4	8.00	4.90
Total	80	4.00	2.77

Table 8. Mean Years of Internet Use by Academic Field (Recoded)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	134.740	11	12.249	1.767	.077
Within Groups	471.260	68	6.930		
Total	606.000	79			

Table 9. Anova Summary for Years of Internet Use by Academic Field

4.2.3 Have faculty perceived a change in their communication style as a result of using Internet?

4.2.3.1 Communication 1.0 Has your communication changed very much as a result of using Internet?

Faculty could respond either Yes or No to this question. The result of a Chi-square analysis shows that significantly more faculty agreed that their communication had been changed than disagreed ($\chi^2 = 61.25$, $df = 1$, $p < 0.0005$) (Table 10).

Replies	Observed N	Expected N	Chi-Square	df	p
Yes	75	40.0	61.25	1	.000
No	5	40.0			
Total	80				

Table 10. Perceptions about Whether Communication Has Changed

In the open-ended comments received for this question, some faculty specifically mentioned their use of communication with students or for classes, with people outside their institution, with people inside their institution, and with friends or family members. The frequency with which these specific comments were made by the participants is shown in Table 11. Note that faculty communicated more than twice as much with people outside the institution than they did with either students (or for classes) or people inside the institution. Many people, of course, did not mention a specific group of people in answering this question.

Communication use	**Frequency**
Students/classes	14
People outside institution	39
People inside institution	14
Friends/family	8

Table 11. Frequency of Remarks Concerning Communication Use

4.2.3.2 Communication 2.0--Using the Internet I communicate with people more quickly than before.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. Seventy-seven faculty members believe that by using Internet they can communicate more quickly with people (χ^2 = 68.45, *df* = 1, *p* < 0.0005) (Table 12).

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	77 3 80	40.0 40.0	68.450	1	.000

Table 12. Perceptions about Communicating with People More Quickly

4.2.3.3 Communication 3.1--Communication using the Internet provides me faster replies to questions.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. Significantly more faculty agreed that Internet use can provide faster replies to questions than disagreed (χ^2 = 57.8, *df* = 1, *p* < 0.0005) (Table 13).

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	74 6 80	40.0 40.0	57.800	1	.000

Table 13. Perceptions about Providing Faster Replies to Questions

4.2.3.4 Communication 3.2---Communication using the Internet provides me more relevant information.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. Significantly more faculty agreed with the statement that Internet provides more relevant information than disagreed (χ^2 = 9.8, df = 1, p = 0.002) (Table 14).

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	54 26 80	40.0 40.0	9.800	1	.002

Table 14. Perceptions about Providing More Relevant Information

4.2.3.5 Communication 3.3---Communication using the Internet is more informal than by phone.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. The results showed that most faculty did not believe that Internet communication is more informal than by phone (χ^2 = 1.8, df = 1, p = 0.18) (Table 15). The proportions of those agreeing and disagreeing are essentially the same.

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	46 34 80	40.0 40.0	1.800	1	.180

Table 15. Perceptions That Communication Is More Informal

4.2.3.6 Communication 3.4--Communication using the Internet is more courteous than by phone.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. The results showed that significantly more faculty disagreed that Internet is more courteous than agreed (χ^2 = 31.25, df = 1, p < 0.0005) (Table 16).

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	15 65 80	40.0 40.0	31.250	1	.000

Table 16. Perceptions That Communication Is More Courteous

The few responses (15) which indicated agreement might be attributed to these faculty having had no bad experiences with people "flaming" them or they were influenced by the fact that this was a positive statement.

4.2.4 Have faculty perceived a change in their pedagogical style as a result of using Internet?

4.2.4.1 Teaching 1.0: Has your teaching style changed very much as a result of using Internet?

Faculty could reply either Yes or No to this question. The obtained Chi-square was 4.05 (df = 1) and significant at the .05 level (p = 0.044) (Table 17). Significantly more faculty disagreed that their teaching style had changed than agreed.

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	31 49 80	40.0 40.0	4.050	1	.044

Table 17. Perceptions about Changes in Teaching Style

This question was intentionally open-ended in order to elicit comments about faculty members' perceptions about the effect of Internet on their teaching.

4.2.4.2 Teaching 2.1--Because I use the Internet I can develop a course more quickly.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. Significantly more faculty disagreed that they can develop a course more quickly with Internet than agreed (χ^2 = 20.0, df = 1, p < 0.0005) (Table 18).

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	20 60 80	40.0 40.0	20.000	1	.000

Table 18. Perceptions about Developing a Course More Quickly

4.2.4.3 Teaching 2.2---Because I use the Internet course material must change more quickly.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. The result was not significant at the .05 level (χ^2 = 3.2 , df = 1, p = 0.074) (Table 19). The proportions of those agreeing and disagreeing with this statement are essentially the same.

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	48 32 80	40.0 40.0	3.200	1	.074

Table 19. Perceptions about Course Material Changing More Quickly

4.2.4.4 Teaching 2.3--Because I use the Internet course material has more relevance to the real world.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. The results were not significant at the .05 level (χ^2 = 0.05, *df* = 1, *p* = 0.823) (Table 20). The proportion of those agreeing and disagreeing with this statement are about the same.

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	39 41 80	40.0 40.0	0.050	1	.823

Table 20. Perceptions about Course Material Having More Relevance to the Real World

4.2.4.5 Teaching 2.4---Because I use the Internet it is more difficult to be sure what material the students are reading.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. The result was not significant at the .05 level (χ^2 = 3.2, *df* = 1, *p* = 0.074) (Table 21). The proportion of those who disagreed and who agreed with this statement are approximately the same.

Replies	Observed N	Expected N	Chi-Square	df	p
Yes	32	40.0	3.200	1	.074
No	48	40.0			
Total	80				

Table 21. Perceptions about Being Sure What Material the Students Are Reading

4.2.4.6 Teaching 2.5---Because I use the Internet I have changed the way I conduct a class.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. Significantly more faculty disagreed than agreed that they have changed the way they conduct a class because of Internet use.(χ^2 = 4.05, *df* = 1, *p* = 0.044) (Table 22).

Replies	Observed N	Expected N	Chi-Square	df	p
Yes	31	40.0	4.050	1	.044
No	49	40.0			
Total	80				

Table 22. Perceptions about the Way Faculty Conduct a Class

Faculty who have used the Internet more are more likely to believe that they have changed the way they conduct a class. A Spearman's Rho test showed a significant correlation (0.279) between the number of years the Internet has been used and whether faculty have changed the way they conduct a class (*n* = 80, *p* = 0.012).

4.2.5 Have faculty perceived an increase in personal productivity as a result of using Internet?

4.2.5.1 Personal productivity 1.0: Has your personal productivity changed since you began using Internet?

Faculty could answer this question either Yes or No. A Chi-square analysis was performed (Table 23). The result (χ^2 = 20.0) was highly significant (*df* = 1, *p* < 0.0005). Significantly more faculty agreed that Internet use has changed their personal productivity than disagreed. Most faculty believed that their productivity had gone up.

Faculty who have used the Internet more are more likely to believe that their personal productivity has changed. The Spearman's Rho test showed a significant relationship (0.248) between the number of years faculty have used the Internet and their opinion about whether their personal productivity has changed (n = 80, p = 0.027).

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	60 20 80	40.0 40.0	20.000	1	.0005

Table 23. Perceptions about Whether Personal Productivity Has Changed

This question was open-ended in order to elicit comments about faculty members' perceptions about the effect of Internet on their personal productivity. When answering this question, some faculty mentioned specifically their productivity in relation to students or courses and in relation to research or communication outside their institution. Faculty mentioned students or courses 22 times compared to 15 times for research/outside communication. Apparently, for some faculty, these two areas were very important when considering their own productivity.

4.2.5.2 Personal Productivity 2.1-- Since I began using the Internet my work load has increased.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. The Chi-square measure was not significant at the .05 level (χ^2 = 0.05, df = 1, p = 0.823) (Table 24). The proportions of those who agreed and who disagreed with this statement are about the same.

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	39 41 80	40.0 40.0	.050	1	.823

Table 24. Perceptions about Whether Work Load Has Increased

If faculty agreed to this question, they were asked whether their productivity quantity, quality, or speed had been affected by Internet. Table 25 shows the replies, when they were given, mentioning quantity, quality, and speed. One person mentioned that his speed had gone down, but the others felt their speed had gone up. The faculty who agreed with this statement generally felt that their work productivity had been positively affected by Internet.

Characteristics	**Frequency**
Quantity	31
Quality	14
Speed	11

Table 25. Frequency of Replies Concerning Quantity, Quality, Speed

4.2.5.3 Personal Productivity 2.2--Since I began using the Internet I have an increased need for self discipline.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. The Chi-square measure was not significant at the .05 level (χ^2 = 0.8, df = 1, p = 0.371) (Table 26). The proportions of those agreeing and disagreeing with this statement are essentially the same.

Replies	Observed N	Expected N	Chi-Square	df	p
Yes	36	40.0	.800	1	.371
No	44	40.0			
Total	80				

Table 26. Perceptions about Need for Self Discipline

4.2.5.4 Personal Productivity 2.3--Since I began using the Internet the timeliness of my work has increased.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. The Chi-square measure was not significant at the .05 level (χ^2 = 0.8, df = 1, p = 0.371) (Table 27). The proportions of faculty who agreed and who disagreed with this statement are approximately equal.

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	44 36 80	40.0 40.0	.800	1	.371

Table 27. Perceptions about the Timeliness of Faculty Work

4.2.5.5 Personal Productivity 2.4---Since I began using the Internet work is more fun.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. Significantly more faculty agreed that work is more fun since they began using Internet than disagreed ($\chi^2 = 7.2$, $df = 1$, $p = 0.007$) (Table 28).

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	52 28 80	40.0 40.0	7.200	1	.007

Table 28. Perceptions about Whether Work Is More Fun

4.2.5.6 Personal Productivity 3.0--Internet use has given me access to so much information that I must spend time filtering out what I want.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. The obtained Chi-square was 57.8 ($df = 1$) and was highly significant ($p < 0.0005$) (Table 29). Significantly more faculty agreed than disagreed that they must spend time filtering all the information Internet makes available.

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	74 6 80	40.0 40.0	57.800	1	.000

Table 29. Perceptions about Needing to Filtering Information

4.2.6 Have faculty perceived a change in the way they achieve fulfillment of the organization's mission as a result of using Internet?

4.2.6.1 Mission 1.0--Internet use has increased my opportunities to witness to others.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. The Chi-square measure was not significant at the .05 level (χ^2 = 1.8, df = 1, p = 0.18) (Table 30). The proportion of those agreeing and disagreeing that Internet use has increased their opportunities to witness (share their feelings about God) to others is about the same.

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	34 46 80	40.0 40.0	1.800	1	.180

Table 30. Perceptions about Opportunities to Witness to Others

4.2.6.2 Mission 2.0--Internet use has made me more comfortable in sharing my feelings about God.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. Significantly more faculty disagreed with the statement than agreed. A Chi-square analysis showed a highly significant result (χ^2 = 48.05, df = 1, $p < 0.0005$) (Table 31).

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	9 71 80	40.0 40.0	48.050	1	.000

Table 31. Perceptions about Sharing Feelings about God

4.2.6.3 Mission 3.0--Internet has changed the types of jobs students can look for.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. A Chi-square analysis was performed and the result was highly significant (χ^2 = 24.2, df = 1, p < .0005) (Table 32). Significantly more faculty agreed that Internet has changed the types of jobs students can look for than disagreed.

Replies	Observed N	Expected N	Chi-Square	df	p
Yes	62	40.0	24.200	1	.000
No	18	40.0			
Total	80				

Table 32. Perceptions about the Types of Jobs Students Can Look for

4.2.6.4 Mission 4.0--Internet has changed the way students look for jobs.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. The results of a Chi-square analysis were highly significant (χ^2 = 18.050, df = 1, p < 0.0005) and indicated that significantly more faculty agreed that Internet has changed the way students look for jobs. (Table 33).

Replies	Observed N	Expected N	Chi-Square	df	p
Yes	59	40.0	18.050	1	.000
No	21	40.0			
Total	80				

Table 33. Perceptions about the Way Students Can Look for Jobs

Faculty who have used the Internet less are more likely to believe that Internet has changed the way students look for jobs. A Spearman's Rho was -0.284 (n = 80, p = 0.011) which indicates a significant negative relationship between the number of years faculty have used the Internet and the belief that Internet has changed the way students look for jobs.

4.2.6.5 Mission 5.0--Internet use can enhance continuing education opportunities (e.g. in the mission field).

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. The Chi-square obtained was 64.8 ($df = 1$) and was highly significant ($p < 0.0005$) (Table 34). Significantly more faculty agreed that Internet use can enhance continuing education opportunities than disagreed.

Replies	Observed N	Expected N	Chi-Square	df	p
Yes	76	40.0	64.800	1	.000
No	4	40.0			
Total	80				

Table 34. Perceptions about Continuing Education Opportunities

4.2.7 Have faculty perceived a change in their social networks as a result of using Internet?

4.2.7.1 Social Networks 1.0--There is less prejudice to newcomers in electronic groups than in other types of groups.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. The obtained Chi-square was 2.45 and was not significant at the .05 level ($p = 0.118$) (Table 35). The proportions of those agreeing and disagreeing about prejudice to newcomers in electronic groups were approximately equal.

Replies	Observed N	Expected N	Chi-Square	df	p
Yes	47	40.0	2.450	1	.118
No	33	40.0			
Total	80				

Table 35. Perceptions about Prejudice to Newcomers in Electronic Groups

4.2.7.2 Social Networks 2.0--There are fewer barriers to joining an electronic group than other types of groups.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. The result of a Chi-square analysis was highly significant ($\chi^2 = 22.05$, $df = 1$, $p < 0.0005$) (Table 36). Significantly more faculty agreed that there are fewer barriers to joining an electronic group than other types of groups.

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	61 19 80	40.0 40.0	22.050	1	.000

Table 36. Perceptions about Barriers to Joining Electronic Groups

4.2.7.3 Social Networks 3.0--Internet offers increased opportunity to 'meet' and 'talk' with persons at distant sites.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. The obtained Chi-square was 68.45 ($df = 1$) and was highly significant ($p < 0.0005$) (Table 37). Significantly more faculty agreed with this statement than disagreed.

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	77 3 80	40.0 40.0	68.450	1	.000

Table 37. Perceptions about Communication with Persons at Distant Sites

4.2.7.4 Social Networks 4.0--The volume of people I keep in frequent touch with has increased due to Internet.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. The results of a Chi-square analysis was highly significant ($\chi^2 = 24.2$ ($df = 1$) and ($p < 0.0005$) (Table 38). Significantly more faculty agreed than disagreed that the volume of people they keep in frequent touch with has increased due to Internet.

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	62 18 80	40.0 40.0	24.200	1	.000

Table 38. Perceptions about Volume of People Faculty Keep in Frequent Touch with

4.2.8 Have faculty perceived a change in the way they do research as a result of using Internet?

4.2.8.1 Research 1.0: Has the way you do research changed very much as a result of using Internet?

This question could be answered either Yes or No. A Chi-square analysis was 18.05 (*df* = 1) and was highly significant ($p < 0.0005$) (Table 39). Significantly more faculty agreed than disagreed that the way they do research had changed as a result of using Internet.

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	59 21 80	40.0 40.0	18.050	1	.000

Table 39. Perceptions about the Way Faculty Do Research

This question was open-ended in order to elicit comments about faculty members' perceptions about the effect of Internet on their research.

4.2.8.2 Research 2.0--Internet provides increased opportunity to communicate with leading scholars in my field.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. The obtained Chi-square was 54.45 (*df* = 1), and was highly significant ($p < 0.0005$) (Table 40). Significantly more faculty agreed that Internet provides more opportunities to communicate with leading scholars than disagreed.

Replies	Observed N	Expected N	Chi-Square	df	P
Yes No Total	73 7 80	40.0 40.0	54.450	1	.000

Table 40. Perceptions about Communication with Leading Scholars

4.2.8.3 Research 3.0--Internet use allows me to explore more new ideas.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. The obtained Chi-square was 36.45 (*df* = 1), and was highly significant ($p < 0.0005$) (Table 41). Significantly more faculty agreed with this statement than disagreed.

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	67 13 80	40.0 40.0	36.450	1	.000

Table 41. Perceptions about the Ability to Explore More New Ideas

4.2.8.4 Research 4.0--Internet provides me access to more current data.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree, but the answers were recoded to be either Yes or No. The obtained Chi-square was 51.2 (*df* = 1), and was highly significant ($p < 0.0005$) (Table 42). Significantly more faculty agreed that Internet provides access to more current data than disagreed.

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	72 8 80	40.0 40.0	51.200	1	.000

Table 42. Perceptions about Access to More Current Data

4.2.8.5 Research 5.0--The quality of my research has increased because of Internet use.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. The obtained Chi-square was 0.05 (*df* = 1), and was not significant (*p* = 0.823) (Table 43). The proportions of faculty who agreed and who disagreed with this statement are essentially the same.

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	41 39 80	40.0 40.0	.050	1	.823

Table 43. Perceptions That Quality of Research Has Increased

4.2.8.6 Research 6.0--The speed of my research has increased because of Internet use.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. The obtained Chi-square was 2.45 (*df* = 1), and was not significant (*p* = 0.118) (Table 44). The proportions of faculty who agreed and who disagreed with this statement are essentially the same.

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	47 33 80	40.0 40.0	2.450	1	.118

Table 44. Perceptions That Speed of Research Has Increased

4.2.8.7 Research 7.0--The quantity of my research has increased because of Internet use.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. The obtained Chi-square was 0.0, and was not significant (*df* = 1, *p* = 1.0) (Table 45). The proportions of faculty who agreed and who disagreed with this statement are the same.

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	40 40 80	40.0 40.0	.000	1	1.000

Table 45. Perceptions That Quantity of Research Has Increased

4.2.8.8 Research 8.0--The methods I use to do research have changed because of Internet use.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree, but the answers were recoded to be either Yes or No. The obtained Chi-square was 9.8 ($df = 1$), and was highly significant ($p = 0.002$) (Table 46). Significantly more faculty agreed with this statement than disagreed.

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	54 26 80	40.0 40.0	9.800	1	.002

Table 46. Perceptions That Methods Used to Do Research Have Changed

4.2.9 Have faculty perceived a change in the way they pursue professional development as a result of using Internet?

4.2.9.1 Professional Development 1.0--I use Internet as a substitute for conferences.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. The obtained Chi-square was 28.8 ($df = 1$), and was highly significant ($p < 0.0005$) (Table 47). Significantly more faculty disagreed with this statement than agreed.

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	16 64 80	40.0 40.0	28.800	1	.000

Table 47. Perceptions about Internet as a Substitute for Conferences

4.2.9.2 Professional Development 2.0--Internet use makes it easier to get information about advances in my field.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. The obtained Chi-square was 36.45 (*df* = 1), and was highly significant ($p < 0.0005$) (Table 48). Significantly more faculty agreed than disagreed that Internet use makes it easier to get information about advances in their fields.

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	67 13 80	40.0 40.0	36.450	1	.000

Table 48. Perceptions about Getting Information about Advances in Academic Fields

4.2.9.3 Professional Development 3.0--Internet provides a more informal way of 'meeting' people, which is helpful in forming professional relationships.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. The obtained Chi-square was 1.8 (*df* = 1), and was not significant ($p = 0.180$) (Table 49). The proportions of faculty who agreed and who disagreed with this statement are essentially the same.

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	46 34 80	40.0 40.0	1.800	1	.180

Table 49. Perceptions That Internet Provides a More Informal Way of 'Meeting' People

4.2.9.4 Professional Development 4.0--Internet communication is more conversational, conferences are often one-way (listening to someone speak but without the opportunity to ask questions).

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. The obtained Chi-square was 0.0, and was not significant (p = 1.0) (Table 50). The proportions of faculty who agreed and who disagreed with this statement are the same.

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	40 40 80	40.0 40.0	.000	1	1.000

Table 50. Perceptions That Internet Communication Is More Conversational than Conferences

4.2.9.5 Professional Development 5.0--Internet makes it possible for me to serve on conference or professional society boards of directors because I can communicate with others easily and quickly.

This question used a five-point Likert scale (Strongly Agree to Strongly Disagree), but the answers were recoded to be either Yes or No. The obtained Chi-square was 12.8, and was highly significant (df = 1, p < 0.0005) (Table 51). Significantly more faculty disagreed with this statement than agreed. The survey answers were not recoded for this test.

Replies	Observed N	Expected N	Chi-Square	df	p
Yes No Total	24 56 80	40.0 40.0	12.800	1	.000

Table 51. Perceptions about Serving on Boards of Directors

5 Conclusions

There was no significant difference in the length of time the Internet has been used by faculty of different ages. There was also no significant difference in the number of years the Internet has been used by faculty in different academic fields.

Faculty believed that their communication had changed because of Internet use and that with Internet they can communicate with others more quickly, get faster replies to questions, and obtain more relevant data. Most faculty did not believe that Internet communication is more courteous than by phone.

Faculty disagreed that their teaching style had changed because of Internet use. They also disagreed that they could develop a course more quickly because of Internet use. Faculty disagreed that they had changed the way they conduct a class because of Internet, but faculty who have used the Internet more are more likely to believe that they have changed the way they conduct a class.

Faculty believe that their productivity has changed with Internet use. Most faculty believe that their productivity has gone up with Internet use. Faculty who have used the Internet longer are more likely to believe that their personal productivity has changed. Faculty believe that with Internet use work is more fun, and that they have access to so much information they must spend time filtering out what they want.

Most faculty disagreed that Internet has made them more comfortable sharing their feelings about God. A significant number of faculty believe that Internet has changed the type of jobs students can look for and that Internet can enhance continuing education opportunities. Most faculty also agreed that Internet has changed the way students look for jobs. The less faculty have used the Internet the more likely they are to believe that Internet has changed the way students look for jobs.

Faculty believe that there are fewer barriers to joining an electronic group and that Internet use has increased their opportunities to "meet" persons at distant sites. Most faculty also agreed that the volume of people they keep in frequent touch with has increased due to Internet use.

Most faculty agreed that Internet has changed the way they do research, especially in the areas of communication with other scholars, exploring more new ideas, access to more current data, and in the methods they use to do research.

Faculty disagreed that Internet could be substituted for conferences and that Internet has made it possible for them to serve on conference or professional society boards. Faculty agreed that Internet makes it easier to get information about advances in their fields.

6 Potential implications for faculty and administrators

In this study, 59% of faculty who were initially selected (see Table 2) reported that they are using the Internet and believe that it benefits them professionally, as discussed in the above findings. It appears that administrators at colleges will need to support at even greater levels the use of Internet by faculty and students.

As more faculty include Internet access in their course work, the school's facilities and support services are likely to become overburdened. Faculty may demand more support for web development and other more sophisticated services that can strain an organization's budget. As courses use increasing amounts of technology, their preparation takes more time, especially if the course is partly or entirely on the web or taught by videoteleconference. Thus faculty will want to be rewarded appropriately for this extra work, so the organization's reward system may need to be changed.

As more faculty use Internet for rapid exchange of ideas and information, the Internet will be regarded as indispensable by even more faculty in doing their jobs. This puts pressure on the faculty to learn the new features and capabilities and on the administration to provide a network which is 100% reliable and faster computers. These are training and budget issues.

As the Internet becomes more commercialized, the way business is conducted is changing, including the way students look for jobs. Students with inadequate access to Internet will be put at a disadvantage in their job search efforts. Providing this access is a budget consideration for educational institutions; not providing it may decrease enrollment. Faculty will also need to ensure that students have adequate guidance and instruction in preparing themselves for the new ways in which business is conducted, including an understanding of ethical issues. As a result faculty will need an increasing amount of support and training in order to keep their own knowledge up-to-date.

As faculty do more research using Internet, publishing in on-line journals may increase. The organization's reward system will need to acknowledge these efforts.

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