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**"The Use of Communication Technology Applications
by Information Technology Educators"**

Topic Area: OEIS Technologies

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The Use of Communication Technology Applications by Information Technology Educators

Introduction

End users are those persons within organizations who represent the final or ultimate users of computer systems and use hardware and software after it has been fully developed and marketed. End users are unlike computer programmers and engineers, who utilize their high levels of technical expertise to develop and test computer systems. Educators represent a special group of end-users because of the influence that these individuals have on the students in the classes that they teach. If the use of communication technology is to increase, educators need to be able to use the associated technologies in order to be able to incorporate information about these technologies into the curriculum.

Communication technology is defined as "...the application and use of technology computers, software, and other electronic devices, and accompanying media and procedures-to make communication more effective than through using traditional means of communication that do not utilize technology." (Gehris, 2002, 4)

Purpose of the Study

The purpose of the study was to determine the extent to which information technology educators in the United States and in other countries use communication technology applications, such as electronic mail, teleconferencing, voice processing, facsimile, wireless communication, and telecommuting..

Literature Review

Although no research could be found that specifically dealt with the focus of this study, studies have been conducted that relate to the amount of usage of some of the communication technologies investigated by educational institutions. Research has also been conducted relating to the reasons for and implications of the use of these technologies by educational institutions

In one study, researchers found that seven out of eight international organizations used some form of computer-based communication technologies. All seven used e-mail, with two organizations using it in a limited manner. Five of the groups used additional computer-based technologies for local and distance communications and training. It was also found that the effect that communication technologies have on the amount of time needed for successful technology transfer varied widely. (Joyner and Onken, 2002)

In another study conducted to assess the impact of videoconferencing technology on interviewer ratings of applications in Great Britain. The results of this study showed that interviewers' ratings of applications were affected by the interview medium and that interviewer evaluations were influenced by an interaction of interview structure and interviewers' gender. (Chapman and Rowe, 2001)

Research Questions

Three research questions were posed for this study about the extent to which information technology educators use communication technology applications.

1. What is the amount of usage of communication technology applications among information technology educators?
2. What types of communication technology applications are information technology educators using?
3. How are information technology educators using communication technology applications?

Methods of Research

An online questionnaire was developed by the researcher to capture background information about the participants: job title, age, income level, education, and country of residence. Questions related to electronic mail, teleconferencing, voice processing, facsimile, wireless communications, and telecommuting were also placed on the questionnaire.

The instrument was reviewed by a colleague and a graduate assistant for face validity and piloted with a group of faculty and students. The pilot revealed wording that was confusing. Based on the results of the review and pilot, minor adjustments were made to the questions.

The questionnaire was administered during the annual conference of the Societe Internationale Pour L'Enseignement Commercial/International Society for Business Education (SIEC/ISBE) held in Mainz, Germany on July 30, 2002. A presentation was conducted by the researcher at the conference in which definitions of the various communication technology applications were provided. A request for additional participation was requested from SIEC/ISBE members later in the Summer via the organization's listserv. Additional e-mail requests were sent to participants who attended the conference in Mainz. In addition, members of the Organizational Systems Research Association (OSRA) were invited to participate via this organization's listserv. Participants were assured that their responses were anonymous.

Results

This section details selected findings pertaining to the participant's use of the various communication technology applications. See Tables 1 through 5 for the responses to the questions on the survey. The following is a summary of the data.

Demographics

This section presents information concerning the demographics of the study participants including job title, age, income level, educational level, and country of residence.

The majority of the participants were educators on the high school, secondary, and post-secondary levels.

Of the forty-six study participants, 2.2% were between the ages of 20-29, 2.2% between 30-39, 22.2% between 40-49, 53.3% between 50-59, and 8.9% between 60-69. The participants' income levels were as follows: 4.4% had incomes of between \$30,000-\$39,999, 11.1% between \$40,000-\$49,999, 13.3% between \$50,000-\$59,999, 31.1% between \$60,000-\$69,999, 4.4% between \$70,000-\$79,999, and 17.8% earned \$80,000 or more.

The participants' educational levels were as follows: 2.2% - High School 6.7% - Bachelor's degree, 48.9% - Master's degree, and 37.8% - Doctorate degree. In terms of the country of residence, 66.7% were from the United States and 33.3% were from other countries. The foreign participants were from the following nine countries: Finland (6.7%), Denmark (4.4%), Germany (4.4%), Sweden (4.4%), Czech Republic (2.2%), Estonia (2.2%), Italy (2.2%), Norway (2.2%), Switzerland (2.2%).

Electronic Mail

All forty-six participants indicated that they use electronic mail (e-mail). A majority (64.4%) indicated that they send and receive most e-mail from the office. A variety of e-mail programs are used. These included Novell GroupWise, Hotmail, Microsoft Outlook, and others. The speed of the Internet connection for sending and receiving e-mail was described by 28.9% as being "average" and 44.4% described it as being "fast."

A majority of the participants (75.6%) indicated that they use e-mail for the majority of their communications. A majority of the participants (82.2%) indicated that e-mail has reduced the number of written correspondence in their organizations; 84.4% indicated that it has reduced the number of phone calls that are sent and received; and 86.7% indicated that e-mail's use has reduced the number of faxes sent and received.

In terms of the use of online e-mail address directories, a majority (60.0%) indicated that they use them, while 93.3% said that they send e-mail attachments at least 10% of the time. It was also found that 68.9% use a signature (a block of text for identification) at the bottom of e-mail messages.

A majority (77.7%) of the participants felt that receiving spammed (unsolicited) e-mail messages was at least somewhat of a problem with 97.8% receiving from 1-40 spammed messages on an average day.

Teleconferencing

A majority of the participants (75.6%) indicated that they have used teleconferencing with 42.2% using audio-conferencing and 17.8% using videoconferencing. A majority (57.8) felt that teleconferencing was inferior to very inferior when compared with face-to-face communications.

When asked "What do you feel is the major benefit of the use of teleconferencing?" a majority (55.6%) felt that "controls travel costs/time" was the most important benefit. When asked "What do you feel is the one major drawback of the use of teleconferencing?" 44.4% felt it was "decrease interpersonal contact and morale" and 24.4% said it was "malfunction of technology."

Voice Processing

When asked for the one benefit that has been most appealing in regard to voice processing, 24.4% said “reduction in ‘telephone tag’” and 20.0% said “no unanswered calls.”

Facsimile

A majority (91.1%) of the respondents indicated that they use the facsimile. In terms of frequency of use, the most common response was that respondents use the facsimile monthly (48.9%) with most (84.4%) indicating that they use it at their place of employment. In terms of the benefit that they felt was most appealing with regard to the use of the facsimile, 44.4% said that it was “because of the “immediate receipt of fax” and 33.3% that it was due to the fact that the fax permitted “transmittal of various types of documents.” There was no clear consensus among the respondents with respect to the one drawback that they felt made the most impact to them with regard to the use of the facsimile. The most important reason given by 37.8% was that facsimiles result in “poor reproduction.”

Wireless Communications

A majority of the respondents (82.2%) who said that they use a cellular phone indicated that they use a handheld phone.

Telecommuting

About two-fifths of the respondents (42.2%) said that they use telecommuting as a part of their job. The number one advantage that respondents indicated for using telecommuting for the employee was that it “reduces travel time” (35.6%). When asked “What drawback of telecommuting do you feel has made the most impact with regard to telecommuting?” 26.7% said “no escape from work” and 22.2% said “lack of socialization.”

Electronic Data Interchange

A majority of the respondents (53.3%) indicated that they had never used electronic data interchange (EDI).

Discussion and Conclusions

The findings clearly show that a majority of the educators in this study use the following communication technology applications: electronic mail, teleconferencing, and facsimile. A majority of the all educators do not use electronic data interchange. Only about two-fifths of the respondents use telecommuting. This is understandable because both electronic data interchange and telecommuting are not applications that typically are used in education.

Recommendations

This study shows that educators use most of the types of common communication technology applications. However, this study did not address whether or not technology educators possess enough knowledge about these applications to teach students about their use in business. Clearly, research is needed to determine educators' knowledge about details associated with these applications, such as advantages, disadvantages, and how each one can best be used. In addition, other types of employees should be surveyed to determine if there is a difference the degree to which each group uses technology applications.

References

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Table 1

Communication Technologies Applications Survey Data--Electronic Mail

Question	Choices	Number Responses	Percentage
1) Do you use electronic mail (e-mail)?	<ul style="list-style-type: none"> • Yes • No • No Answer 	44 0 0	100% 0% 0%
2) Where do you send and receive most e-mail?	<ul style="list-style-type: none"> • Home • Office • No Answer • Other 	14 28 2 8	31.8% 63.6% 4.5% 18.2%
3) What e-mail program do you use the most?	<ul style="list-style-type: none"> • AOL • Hotmail • GroupWise • Yahoo • No Answer • Other 	4 6 8 1 4 28	9.1% 13.6% 18.2% 2.3% 9.1% 63.6%
4) For sending and receiving e-mail messages, how would you describe the speed of the Internet connection?	<ul style="list-style-type: none"> • Very Slow • Slow • Average • Fast • Very Fast 	0 2 14 19 9	0% 6.5% 31.8% 63.2% 20.5%
5) Which of the following do you use for the majority of your communications?	<ul style="list-style-type: none"> • Face-to-Face • E-mail • Telephone • Other 	7 33 4 2	15.9% 75% 9.1% 4.5%
6) Has the use of e-mail reduced the number of written correspondence?	<ul style="list-style-type: none"> • Yes • No • No Answer 	36 7 1	81.8% 15.9% 2.3%
7) Has the use of e-mail reduced the number of phone calls that you send and received in your organization?	<ul style="list-style-type: none"> • Yes • No • No Answer 	37 6 1	84.1% 13.6% 2.3%
8) Has the use of e-mail reduced the number of faxes that you send and receive in your organization?	<ul style="list-style-type: none"> • Yes • No • No Answer 	38 4 2	86.4% 9.1% 4.5%

Table 1 (continued)

Question	Choices	Number Responses	Percentage
9) When you open the e-mail that you receive, what do you do first?	• Scan the subject line	37	70.5%
	• Read the body	11	25.0%
	• No Answer	2	4.5%
	• Other	5	11.4%
10) Have you every used an online e-mail directory?	• Yes	26	59.1%
	• No	17	36.8%
	• No Answer	1	2.3%
11) How often do you send attachments with your e-mail messages?	• 10% of time	16	36.4%
	• 25% of time	14	31.8%
	• 50% of time	9	20.5%
	• 75% of time	2	4.5%
	• 100% of time	0	0%
	• No Answer	1	2.3%
12) How many spammed e-mail messages do you receive on an average day?	• 0	3	6.8%
	• 1-10	22	50.0%
	• 11-20	9	20.5%
	• 21-30	6	13.6%
	• 31-40	4	6.8%
	• 40+	1	2.3%
	• No Answer	0	0%
13) How do you view spammed e-mail messages?	• Large Problem	20	45.5%
	• Somewhat of a Problem	15	34.1%
	• Small Problem	6	13.6%
	• Not a Problem	2	4.5%
	• No Answer	1	2.3%
14) Have you used a signature at the bottom of an e-mail message?	• Yes	30	68.2%
	• No	13	29.5%
	• No Answer	1	2.3%

Table 2

Communication Technologies Applications Survey Data--Teleconferencing

Question	Choices	Number Responses	Percentage
1) Have you ever used teleconferencing?	<ul style="list-style-type: none"> • Yes • No • No Answer 	34 9 1	77.3% 20.5% 2.3%
2) What type of teleconferencing have you used the most?	<ul style="list-style-type: none"> • Audio • Video • Business TV • Computer • No Answer • Other 	20 8 2 2 12 3	45.5% 18.2% 4.5% 4.5% 27.3% 6.8%
3) How often do you use teleconferencing?	<ul style="list-style-type: none"> • Daily • Weekly • Monthly • Yearly • No Answer 	0 2 8 20 14	0% 4.5% 18.2% 45.5% 31.8%
4) How do you feel about the difference between the use of teleconferencing compared to face-to-face communication?	<ul style="list-style-type: none"> • Much Better • Better • About the Same • Inferior • Very Inferior • No Answer 	0 1 9 22 4 8	0% 2.3% 20.5% 50.0% 9.1% 18.2%

Table 2 (Continued)

Question	Choices	Number Responses	Percentage
5) What do you feel is the one major benefit of the use of teleconferencing?	<ul style="list-style-type: none"> • Improves Productivity • Controls Travel Costs/Time • Solves Problems Quickly/Eff. • Access to Experts • Exchange of Information • More meetings • No Answer 	<p style="text-align: center;">3</p> <p style="text-align: center;">25</p> <p style="text-align: center;">1</p> <p style="text-align: center;">2</p> <p style="text-align: center;">4</p> <p style="text-align: center;">1</p> <p style="text-align: center;">8</p>	<p style="text-align: center;">6.8%</p> <p style="text-align: center;">56.8%</p> <p style="text-align: center;">2.3%</p> <p style="text-align: center;">4.5%</p> <p style="text-align: center;">9.1%</p> <p style="text-align: center;">2.3%</p> <p style="text-align: center;">18.2%</p>
6) What do you feel is the one major drawback of the use of teleconferencing?	<ul style="list-style-type: none"> • Decrease Interper. Contact & Morale • Malf. Tech. • No Answer • Other 	<p style="text-align: center;">20</p> <p style="text-align: center;">10</p> <p style="text-align: center;">14</p> <p style="text-align: center;">4</p>	<p style="text-align: center;">45.5%</p> <p style="text-align: center;">22.7%</p> <p style="text-align: center;">31.8%</p> <p style="text-align: center;">9.1%</p>
7) Have you organized or participated in business television conferencing?	<ul style="list-style-type: none"> • Yes • No • No Answer 	<p style="text-align: center;">12</p> <p style="text-align: center;">20</p> <p style="text-align: center;">12</p>	<p style="text-align: center;">27.3%</p> <p style="text-align: center;">45.5%</p> <p style="text-align: center;">27.3%</p>
8) Have you organized or participated in computer conferencing?	<ul style="list-style-type: none"> • Yes • No • No Answer 	<p style="text-align: center;">15</p> <p style="text-align: center;">19</p> <p style="text-align: center;">10</p>	<p style="text-align: center;">34.1%</p> <p style="text-align: center;">43.2%</p> <p style="text-align: center;">22.7%</p>

Table 3

Communication Technologies Applications Survey Data--Voice Processing/Facsimile

Question	Choices	Number Responses	Percentage
1) What one benefit has been the most appealing to you in regards to voice processing?	• Integration with other systems	2	4.5%
	• Good one-way communication	3	6.8%
	• Reduction of "tele- phone tag"	9	20.4%
	• No unanswered calls	10	22.7%
	• Privacy	5	11.4%
	• Reduce no. of memos	1	2.3%
	• Ease of use	3	6.8%
	• No Answer	11	25.0%
	2) Have you used a facsimile?	• Yes	40
• No		1	6.8%
• No Answer		3	2.3%
3) How often do you use facsimile?	• Daily	5	11.4%
	• More than twice a day	0	0%
	• Weekly	13	29.5%
	• Monthly	21	47.7%
	• No Answer	5	11.4%
4) What benefit has been the most appealing to you with regard to the use of facsimile?	• Immediate receipt	20	45.5%
	• No rekeying	3	6.8%
	• Transmit. of various types of documents	15	34.1%
	• Other	4	9.1%
	• No Answer	6	13.6%

Table 3 (Continued)

Question	Choices	Number Responses	Percentage
4) What one drawback do you feel has made the most impact to you with regard to the use of facsimile?	• Original Required	5	11.4%
	• No Color	4	9.1%
	• Too Expensive	5	11.4%
	• Junk Faxes	4	9.1%
	• Poor Reprod.	16	36.4%
	• Must Know Fax Number	1	2.3%
	• No Answer	9	20.5%
	• Other	1	2.3%

Table 4

Communication Technologies Applications Survey Data--Wireless Communication

Question	Choices	Number Responses	Percentage
1) If you use a pager, what type do you use?	• Tone only	0	0%
	• Tone & Voice	1	2.3%
	• Numeric Display	1	2.3%
	• Alphanumeric Display	0	0%
	• No Answer	42	95.5%
	• Other	1	2.3%
2) If you use a cellular phone, what provider do you use?	• AT&T	5	11.4%
	• Verizon	9	20.5%
	• Nextel	1	2.3%
	• Sprint	1	2.3%
	• No Answer	28	63.6%
	• Other	21	47.7%
3) If you use a cellular phone, what type do you use the most?	• Handheld	30	68.2%
	• Transportable	7	15.9%
	• Don't use a cell phone	1	2.3%
	• No Answer	6	13.6%

Table 5

Communication Technologies Applications Survey Data--Telecommuting/EDI

Question	Choices	Number Responses	Percentage
1) Have you every used telecommuting as part of your job?	<ul style="list-style-type: none"> • Yes • No • No Answer 	<p style="text-align: center;">19 21 4</p>	<p style="text-align: center;">43.2% 47.7% 9.1%</p>
2) What one advantage of telecommuting do you fell is most important as an employee?	<ul style="list-style-type: none"> • Reduces travel time • Improves Quality of Life • No Answer • Other 	<p style="text-align: center;">16 8 20 2</p>	<p style="text-align: center;">36.4% 18.2% 45.9% 4.5%</p>
3) What drawback of telecommuting do you fell has made the most impact with regard to telecommuting?	<ul style="list-style-type: none"> • Lack of Socialization • No Escape from Work • No Answer • Other 	<p style="text-align: center;">11 11 21 3</p>	<p style="text-align: center;">25.0% 25.0% 47.7% 6.8%</p>
4) Have you ever used EDI (Electronic Data Interchange)?	<ul style="list-style-type: none"> • Yes • No • No Answer 	<p style="text-align: center;">3 25 16</p>	<p style="text-align: center;">6.8% 56.8% 36.4%</p>