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A survey of 150 UNC-Chapel Hill faculty and staff members was processed to determine their perceptions of videoconferencing as a form of effective communication. Previous studies have determined that videoconferencing can save time and travel costs for large corporations. This study examines perceptions of three types of videoconferencing: group system videoconferencing, videophones, and desktop videoconferencing. The purpose of the study is to identify the possible motivations for adoption and usage of videoconferencing equipment in a university setting.

Headings:

Videoconferencing - - Equipment and Supplies

Business communication - - Technological innovations

Digital communications

Multimedia systems

Telecommunication

VIDEOCONFERENCING PERCEPTIONS: A SURVEY OF UNIVERSITY OF
NORTH CAROLINA FACULTY AND STAFF

by
Kristin M Lancaster

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Approved by

Deborah Barreau

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Introduction

Videoconferencing connects two physically separated locations through real-time audio, video, and data connectivity. The benefit of this type of communication is that videoconferencing can mimic face-to-face communication without the hassle and expense of traveling to distant meetings and conferences. Videoconferencing has already been adopted in many niche markets including distance education, telecommunication, and continuing professional support/education. Despite its many benefits, videoconferencing has not become a prevalent form of communication in most U.S. organizations and universities. Industry experts suggest that videoconferencing still needs improvement in areas such as price, security, support, interoperability, and audio/video performance (Krebs, 2002).

Communication and collaboration are essential to every organization. As companies become more geographically dispersed, inexpensive face-to-face communication will become essential. Humans prefer face-to-face interactions over audio-only interactions because they can see nonverbal clues that express satisfaction, discomfort, or confusion. Due to the present depressed economy, many companies will need to cut their travel budgets and will consider adopting videoconferencing software to help connect their employees and increase productivity. Video technology advancements such as networking over IP or ISDN lines, 2-D images, and real time video and audio

streams can realistically mimic face-to-face meetings. Vendors are becoming more flexible by allowing software products to be less proprietary and increasing the interoperability between heterogeneous equipment.

Though videoconferencing seems convenient and cost-effective, most of today's corporate and academic environments are not employing videoconferencing as a standard form of communication. Factors such as price, user education, and lack of technical support could be affecting the adoption of videoconferencing. The present study surveyed 150 faculty and staff members at a large university and gathered information concerning their perceptions and attitudes towards the adoption of videoconferencing. By compiling their opinions the following questions will be answered: What type of videoconferencing equipment is perceived as most useful in a large academic setting? Do faculty and staff members at UNC-Chapel Hill value videoconferencing as an effective way to communicate? Do they think that videoconferencing will save them time and travel costs? Which conditions would encourage faculty and staff members to adopt videoconferencing?

Literature Review

Videoconferencing can be defined as “Two or more remotely located people electronically sharing audio, video, and data via either desktop PC or a group room system” (Fusell and Benimoff 1995). Videoconferencing is a collaborative technology. Crede and Sniezek (2003) explain that “Collaborative technologies for synchronous communication allow the dispersed decision makers to ‘meet’ without the time, effort, and financial costs of a face-to-face meeting.”

In the article “Star of the Big Screen” Grimes (2003) notes, “The speed with which individuals can communicate (over videoconferencing) facilitates faster decision making, quicker response times, and, inevitably, increases competitive advantage.” This suggests that businesses are aware of the potential competitive advantage they could attain through the use of videoconferencing equipment. He also admits “Although the anticipated boom (in purchasing videoconferencing equipment) did not materialize, many organizations with existing videoconferencing facilities made more use of them. In many cases, this created a cultural shift that saw employees becoming more accustomed to exchanging ideas via a videoconferencing screen.” This suggests that companies who have used videoconferencing equipment the most are more comfortable with this technology and will be more likely to use it more often.

In general, research has shown that videoconferencing provides certain advantages over audio-only telephone conversations. Tang and Isaacs (1992) discovered that interviewed users of desktop videoconferencing liked the video portion of the system

because they could view each other's reactions and judge if they were being understood. Through informal chats using desktop videoconferencing, interviewed users felt they could engage in more social, personal contacts through video interactions. The video portion of the system also allowed participants to inspect the behaviors of other participants such as reading email during the meetings or aid in interpreting long audio pauses due to interruptions. Sellen (1992) also noted that people believe they are better able to track the attention of others when they have video as opposed to audio-only conversations.

Though audio-only communications are limited, research on computer-mediated communications has indicated that face-to-face meetings are preferable to technology-mediated interactions on many different dimensions. Kiesler and Sproull (1992) found that computer-mediated groups required more time than face-to-face groups to come to an agreement and they also made riskier decisions than face-to-face groups. Olaniran (1996) explained this phenomenon as a reaction to the new communication media and the lack of familiarity with using the new systems caused computer-mediated groups to take extra time. Crede and Sniezek (2003) note that "The goal is thus for technologies such as videoconferencing to allow groups to become more efficient without creating new, more serious problems such as a decrease in the quality of group decisions that result from such interactions."

In regards to the benefits of using computer-mediated groups, Kiesler and Sproull (1992) discovered that computer-mediated groups showed a greater expression of opinions by group members, more unconventional decisions, and greater equality of participation. Sumner and Hostetler (2002) compared face-to-face and video-mediated

decisions and found that computer-mediated interactions helped to increase the quality of group decisions by creating a heightened psychological distance between members which promoted a wider range of opinions and more participation among group members.

Many studies have found very few differences between face-to-face group decisions and video-mediated group decisions. Crede and Sniezek (2003) summarize their findings by saying “Decision-making that was mediated by a video link did not produce group estimates that were significantly larger, more accurate, or a greater improvement on the average initial individual estimates than was the case for face-to-face interactions.” They go on to note that according to the findings of their study, “computer-mediated decision-making can be substituted for face-to-face interactions” for estimation tasks.

The research on videoconferencing is conflicting and inconclusive. Whether videoconferencing is an effective method of communication depends on several factors. Lantz (2001) identifies seven main variables to consider for computer-mediated meetings: size of group, type of meeting, type of task, procedure of a meeting, communication, type of technology, and type of tool. The present study focuses on the type of technology variable.

Kodama (2000) describes the increasing demand for video terminals and claims “video terminals are classified as being of three types: room, desktop, or videophone.” The present study examines these three types of videoconferencing and the perceptions that people have regarding this equipment. Room system videoconferencing is considered to be equal to group system videoconferencing in this study.

Group system videoconferencing

Group (room) system videoconferencing is a multi-user environment that typically uses high priced video cameras, microphones, and TV monitors to relay voice and video over a computer network. Group systems are flexible in that they can be used for one-to-one interactions, one-to-group interactions, or group-to-group interactions. Kodama (2000) writes “the room type is a traditional videoconferencing system that appeared around the world in the mid-1980’s as a corporate user-oriented product.” These systems were initially priced as high as \$250,000 for all of the equipment and software that was necessary for videoconferencing. Room system videoconferencing typically results in higher quality video and audio than desktop videoconferencing or videophone videoconferencing. The advantage of room system videoconferencing is that it gives a better illusion of face-to-face communication.

In the article “Closer than You Think”, Krebs details reasons that room system videoconferencing is not a popular choice for most major corporations today. Although Barry Walker (Polycom employee) claims “The unfortunate circumstance of 9/11 did bring a significant up-tick in interest”, he also notes that “Big companies are still not ready to deploy big investments in the technology.” He also claims that “customers are concerned about security, about putting out potentially sensitive company information in a kind of open Web format.” Security concerns could therefore be a reason that businesses do not see room system videoconferencing as a possible alternative to face-to-face meetings.

Industry experts claim that companies are not purchasing room system videoconferencing equipment because they are not recognizing the value of “the whole

multimedia experience, the ability to collaborate” (Krebs, 2002). Struggling companies opt for face-to-face meetings instead of adopting this new technology which may require extra staff or consultants to set-up and configure. Regarding network interoperability for room system videoconferencing, one industry expert states “The real problem is the usability aspect. Once you get into a situation with a heterogeneous network, the problem is the end-user now needs to understand what a gateway is, what an MPU is, what his situation is versus the other party” (Krebs, 2002). Companies that wish to adopt room system videoconferencing will need to invest time and money to properly train their employees in using the new equipment.

Desktop videoconferencing

In the early 1990’s, desktop videoconferencing systems appeared. Kodama (2000) claims “this desktop computer-based system enjoyed wide success due to its low cost compared with the room system and the ability to share data in a collaborative environment”. This enabled small and medium-sized firms to participate in videoconferencing without having to pay \$80,000 for PictureTel room system equipment (1986 estimate). Desktop video systems are best for very small groups or one-to-one communication. Desktop videoconferencing typically uses a desktop computer and video camera to transfer audio and video images between networked computers.

Lantz (2001) observed two formal group meetings using desktop videoconferencing equipment. One group consisted of eight technical experts on videoconferencing and the other group contained four members that had little or no experience in videoconferencing but were experts in an academic area. Lantz found the

group with little experience in videoconferencing was dissatisfied with their committee meeting via desktop videoconferencing. Reasons for dissatisfaction included microphone echo effects, lag of audio and video, and turn-taking difficulties. Overall, the academic experts said that the meeting was not as efficient as expected. Desktop videoconferencing in this study did not allow the participants to pose “short questions while someone else was talking”, therefore, not all the members of the group participated as much as they could have if the meeting had been face-to-face. Only one type of technology (desktop videoconferencing) was examined in this study. In contrast, the current study will gather perceptions of desktop videoconferencing from a larger random sample of academic faculty and staff and compare these perceptions to room system videoconferencing perceptions and videophone perceptions.

Tang and Isaacs (1993) discovered that desktop videoconferencing users noticed a few advantages as compared to phone conversations. But when desktop videoconferencing was compared to face-to-face meetings, face-to-face meetings proved superior in allowing participants to manage turn-taking better, acquire or retain floor control, notice expressions or gestures, or have side conversations.

Though Tang and Isaacs suggested that desktop videoconferencing offers value over telephone conferencing, they noted that face-to-face conversations were the most superior. Some nonverbal communications that can be missed using desktop videoconferencing such as gestures, turn taking, and eye contact, can relay messages of boredom, discomfort, nervousness, or attentiveness (Lantz, 2001). Isaacs also notes that participants can express attitudes such as skepticism, surprise, amusement, and confusion

through posture and facial expressions that could be missed by the small screens used in desktop videoconferencing (1993).

In the article “Video Conferencing Has Arrived” Fritz (2002) discusses the popularity of desktop videoconferencing systems and the development of “ease-of-use” features that should improve sales and better mimic face-to-face communication. He also mentions the projected increase in videoconferencing popularity following the September 11th terrorist attacks. Finally, he notes that North America represents the largest market for videoconferencing equipment but that many projections of desktop videoconferencing sales have been overestimated. This article suggests that desktop videoconferencing equipment is becoming more user-friendly and there has been a stronger demand for this technology since 9/11/2001. But he also notes that speculation of desktop videoconferencing sales was surprisingly high compared to the actual sales of that equipment.

Videophones

In 1992, AT&T introduced the first videophone specifically for use in the home market (\$1500). Videophones are best utilized as a one-to-one communication device, but they can also be used in one-to-many connections or many-to-many connections. Videophones look similar to regular telephones but have small screens attached to them in order to view the person that you are calling. The person that you call must also have a videophone in order to use the video portion of the phone.

Bruce (1996) studied face-to-face interactions through videophones and determined that image quality and resolution were not as important as temporal

parameters (which are essential for lip reading). Performance on a map task was not affected by means of communication (audio versus video performed the same) but was affected by adding a delay of 500 ms. Bruce postulates that videophone design should focus more on improving temporal delays instead of pixel quality.

O'Malley et al. (1996) found that users of videophones produced longer and more interrupted dialogues compared with those that used audio-only communications. Performance on a map task was negatively affected when videophones with transmission delays were used. This suggests that videophone users will perform less accurately on tasks if they have lower bandwidth connections.

Videophones have been used as portable telecommunication devices (recently used by reporters in Afghanistan) and to aid people that are hard of hearing or deaf. Jeal et al. (1996) reported on libraries in Northwest England that employed videophones to assist deaf people. The authors claim "For the deaf community, this offers amazing possibilities, and gives deaf people potential access in so many areas using sign language."

Methodology

The present study used questionnaires to determine UNC-Chapel Hill faculty and staff perceptions of three types of videoconferencing equipment (room system, videophones, and desktop videoconferencing). The study aims to discover if respondents agree that videoconferencing will save them both time and money for their work projects. Additionally, the study examines the preferred location for using videoconferencing equipment. The questionnaire consisted of 27 Likert-scale items and open-ended questions regarding perceptions of three types of videoconferencing technology. The questionnaire took approximately ten minutes to complete. The survey used pictures and text to describe room system videoconferencing, videophones, and desktop videoconferencing.

One hundred fifty participants were chosen using a random number generator from the University of North Carolina faculty and staff directory phone book (2003-2004 edition pages 55-321). The random number generator was used to locate the page number, column number, and row number of the participants that were selected from the directory. 150 four-page mail surveys (Appendix A) and single page cover letters were sent to these 150 participants. Due to the general contents of the faculty and staff campus directory, it is likely that the participants were aged from 21 to 75 years-old and both males and females were selected to participate. Participants were asked to volunteer their time and opinions and in compensation, they could enter into a lottery to win a free Palm Pilot PDA XV donated by the videoconferencing department at UNC-Chapel Hill. Participants did not have to fill out the survey in order to participate in the lottery (a separate registration card could be returned in order to register for the drawing). Also,

participants were told they did not have to have any experience with videoconferencing in order to participate in the survey.

Participants anonymously returned the completed surveys to a campus box address and no personal information was tracked on the surveys (except for the last question which asked for their affiliation with UNC). Participants were given a month to complete the surveys and a follow-up letter was sent a week before the surveys were due to remind participants of the due date. Data collection occurred in March 2004.

Responses were analyzed using SPSS software and conclusions were formed regarding the perceptions of videoconferencing on the UNC campus. By collecting data on videoconferencing, this study will help administrators at large universities understand how faculty and staff are perceiving videoconferencing equipment and what services would encourage the adoption of this equipment.

Results and Analysis

Out of the 150 surveys distributed, 44 were returned completed (29% response rate). Because this study is examining the differences between room system videoconferencing, desktop videoconferencing, and videophones, the survey began with seven identical questions for each type of technology. Part I of the survey included a picture of each of the three types of technology and included a description of the technology next to the picture. Question 1 asked if group system videoconferencing could be useful for saving time.

Response	Frequency	Percent	Cumulative Percent
Strongly disagree	1	2.3	2.3
Disagree	3	6.8	9.1
Neutral	9	20.5	29.5
Agree	17	38.6	68.2
Strongly agree	14	31.8	100.0
Total	44	100.0	

Table 1 – Group system videoconferencing could be useful for saving time.

Response	Frequency	Percent	Cumulative Percent
Strongly disagree	1	2.3	2.3
Disagree	2	4.5	6.8
Neutral	13	29.5	36.4
Agree	14	31.8	68.2
Strongly agree	14	31.8	100.0
Total	44	100.0	

Table 2 – Group system videoconferencing could be useful for saving money.

Response	Frequency	Percent	Cumulative Percent
Strongly disagree	1	2.3	2.3
Disagree	8	18.2	20.5
Neutral	9	20.5	40.9
Agree	22	50.0	90.9
Strongly agree	4	9.1	100.0
Total	44	100.0	

Table 3 – Group system videoconferencing could be useful for improving communications.

Seventy percent of respondents strongly agreed or agreed that group system videoconferencing could be useful for saving time on work projects. In addition, 63% of respondents strongly agreed or agreed that group system videoconferencing could be useful for saving money on work projects while 59% thought it would be useful for improving communication. (Tables 1, 2, and 3) Using the same scale, respondents rated videophones significantly lower for saving time (27%), saving money (27%), and improving communication (47%) for their work projects. In comparison, respondents strongly agreed or agreed that desktop videoconferencing was useful for saving time (57%), saving money (50%), and improving communication (63%).

Response	Group System	Videophone	Desktop
Save time	70%	27%	57%
Save money	63%	27%	50%
Improve communication	59%	47%	63%

Table 4 – Percent of respondents who agreed or strongly agreed to the questions.

A paired-samples t-test was conducted to evaluate the hypothesis that there was a difference in the mean ratings between the three types of technology (for saving time). The mean rating for group systems videoconferencing was 2.91 (SD=1.007), the mean rating for videophones was 1.68 (SD=1.095) and the mean rating for desktop videoconferencing was 2.57 (SD=.998) The test was significant ($p < .01$). Next, a paired-

samples t-test was conducted on the three types of technology for the question about saving money (Question 2). The mean rating for group systems videoconferencing was 2.86 (SD=1.002), the mean rating for videophones was 1.66 (SD=1.140) and the mean rating for desktop videoconferencing was 2.43 (SD=.974) The test was significant ($p < .01$). Finally, the t-test was applied to Question 3, regarding improving communication within the organization. The mean rating for group systems videoconferencing was 2.45 (SD=.975), the mean rating for videophones was 2.05 (SD=1.200) and the mean rating for desktop videoconferencing was 2.57 (SD=1.021). This test was not significant ($p > .01$). This suggests that people have preferences for a type of technology regarding how it will save them time and money, but they do not have preferences regarding how it will improve communication within their organization.

The next two questions (Questions 4 and 5) focused on where videoconferencing tools would be useful (office versus home). Question 6 asked whether or not people would use videoconferencing in order to keep in touch with their family and friends. Desktop videoconferencing resulted in the highest ratings for usefulness in the office, and from home, but videophones were rated the highest in order to keep in touch with family/friends.

Response	Group System	Videophone	Desktop
Useful in office	50%	36.4%	52.3%
Useful to conduct business from home	11.4%	18.2%	27%
Useful to keep in touch with family/friends	34%	45.4%	43%

Table 5 – Percentage of respondents who agreed or strongly agreed to the questions.

Question 7 asked respondents how much they would pay for each type of technology per month. Considering over half of the respondents put “0” or left the question blank, it is presumed to be a confusing or misleading question. The mean for group system videoconferencing was \$23.86 per month, the videophone mean was \$15.11 per month, and the desktop videoconferencing system mean was \$16.59 per month for this question.

Forty of the forty-four participants reported that they do not use videoconferencing equipment. This suggests that the sample was relatively inexperienced with videoconferencing equipment. Though a few respondents had experience in telecommuting and room system videoconferencing, over 90% did not have experience with desktop videoconferencing or videophone videoconferencing. Fourteen of the respondents identified themselves as “Faculty/Professor” positions while thirty reported that they were in “Staff/Administrator positions”.

Conclusions

In this study, user perception of three types of videoconferencing equipment was gathered. As evidenced in the results, the faculty and staff sample of UNC employees believe group system videoconferencing is best for saving time and saving money. Desktop videoconferencing equipment is a close second in these categories, and videophones were a distant third, receiving approval by fewer than 30% of respondents. It can be concluded that the academic faculty and staff at UNC believe that group system videoconferencing could improve productivity within their department by saving their employees both time and money. According to the videoconferencing department, very few group room systems exist on campus, so possibly this finding could encourage managers to consider purchasing this type of equipment.

In response to “improving communication with people you regularly interact with”, the participants chose desktop videoconferencing, then group system videoconferencing, and then videophones. Desktop videoconferencing is possibly seen as more convenient than room system videoconferencing in that you do not have to reserve the equipment or the room before you can begin conferencing. Desktop videoconferencing allows for last minute “impromptu” conferencing and only requires two people that wish to be connected. Room systems tend to encourage larger groups of people to participate while desktop equipment is generally used by individuals. One possible finding from the study is that respondents feel that desktop videoconferencing can occur in a much more informal and personal environment (at your desk in your office) and therefore, could potentially be used more often than room system

videoconferencing. Possibly this informal setting helps to improve and encourage interpersonal communication more than the formal room systems videoconferencing.

When asked whether each system would be useful in their office, respondents thought that desktop videoconferencing would be the most useful by a narrow margin over group system videoconferencing. This may be due to the fact that room systems take up a lot of physical space, therefore, respondents may not envision a room system in their office. Possibly one finding of this study is that managers need to support the implementation of desktop videoconferencing for office communication.

Most respondents did not feel that videoconferencing would be useful for conducting business from their home. Desktop videoconferencing was reported to be the most useful type of technology for conducting business from home (27% agreed or strongly agreed that it would be useful for this purpose). Respondents reported that room systems would be the least useful for conducting business from home. One possible reason for this is that academic faculty and staff realize that room system equipment is expensive, but they were not directly asked this in this study.

One surprise uncovered by this study is how respondents thought that videophones would be the most useful for keeping in touch with family and friends. Though many families already have desktop computers at home (which would seem to make desktop videoconferencing the most convenient choice), respondents were willing to consider buying videophones in order to keep in touch with their family and friends. Possibly this is due to the idea that most people are familiar with how telephones work and usually do not have trouble operating telephones as compared to problems that they have operating personal computers. Also, videophones are currently being advertised for

the home market; therefore, people may perceive this type of equipment as useful for keeping in touch with family and friends. People were definitely not willing to install group system videoconferencing in their homes which is understandable considering their cost and configuration issues.

The data gathered from this survey will help the videoconferencing department provide better services for the UNC-Chapel Hill community. In general, faculty and staff at UNC have positive perceptions regarding the advantages of desktop videoconferencing and room system videoconferencing. Room system videoconferencing might be too expensive for departments to adopt at this time. Room systems also require users to move locations and reserve equipment, therefore, they may be seen as less convenient from a user perspective. But desktop videoconferencing is a cheaper alternative that could help to encourage informal and spontaneous video and audio communications. Administrators should consider adopting this new technology but only if they are willing to train their employees and provide support for this type of communication. Though videophones seem to be a popular option for keeping in touch with family and friends, they are not valued for business purposes. Overall, videoconferencing should be regarded as a complement to face-to-face interactions instead of a replacement.

Recommendations for Further Study

This study would result in more accurate data if experimental method was used and participants were asked to test these three types of videoconferencing. Participants should also be exposed to relevant examples of office use, telecommuting, and private home use. Once participants have experienced working with different equipment for different purposes, their opinions and perceptions about that equipment could result in different conclusions.

Many factors should be examined to determine the ideal type of communication technology to be utilized including task to be completed, type and size of group, types of tools used, and time constraints. Future studies should also examine a larger sample to attain more significant results. It should also be noted that some UNC faculty and staff were unable to be part of this study since new employees were not be listed in the 2003-2004 directory, therefore, these employees were not selected for this study (along with faculty and staff that chose not to be listed in the directory). Additionally, future studies should examine the differences found between faculty and staff due to their distinct position requirements and whether they are in decision-making positions regarding the adoption of technology.

This study suggests that academic faculty and staff believe that videoconferencing is useful for saving time, saving money, and improving communication within their organization. Future studies should use qualitative interviews to determine the reasons that faculty and staff view room systems as more useful than videophones. Possibly this finding could be due to the academic sample that was selected for this study. The sample in this study might have only been exposed to room system videoconferencing, therefore,

they would have familiarity with this type of equipment. Future studies could focus on academic groups that regularly use different types of videoconferencing for work projects and their perceptions of the three types of equipment. Additionally, studies could test this finding in more geographically distributed academic departments to see if this affects the results.

The findings in this study suggest that decision makers at UNC-Chapel Hill should consider room system videoconferencing as a valuable tool for saving time and money for academic faculty and staff members. Additionally, this study suggests that desktop videoconferencing might help UNC employees save time and money within their departments. If administrators are willing to purchase equipment and train their employees in using videoconferencing, this could possibly result in greater productivity and lower costs for each department. As part of a strategic plan to examine the advantages of videoconferencing, UNC could develop pilot groups that would be likely to benefit from videoconferencing technologies. By testing the productivity of these groups and comparing them to traditional face-to-face meetings, UNC might discover that this equipment saves the university both time and money while improving communication between coworkers.

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Appendix A - Videoconferencing Survey

VIDEOCONFERENCING SURVEY

This survey is about small group technologies over the Internet. You do not have to have previous experience in videoconferencing in order to participate. This survey should take less than ten minutes of your time to fill out. All answers will be kept strictly confidential and will not be identified with you personally. Please return the survey through campus mail in the provided envelope by **March 15th** if you wish to participate.

Feel free to fill out the enclosed registration card if you would like to be entered into the free Palm PDA drawing (please return the card separately...the winner will be notified by email address). You may enter the drawing even if you do not wish to fill out the survey.

PART I: SCENARIOS Please review the following...

GROUP SYSTEM VIDEOCONFERENCING:



Group videoconferencing systems are useful when you are involved in a grant or project that has several sites at other institutions or locations. This is often the case in multi-site grants, research projects, or professional organizations. In work settings, group videoconferencing systems are typically a shared resource located in a conference room.

For your work projects, could this technology be useful for:
(please circle one answer)

1. Saving time

Strongly Disagree Disagree Neutral Agree Strongly agree

2. Saving money

Strongly Disagree Disagree Neutral Agree Strongly agree

3. Improving communication with the people you regularly interact with?

Strongly Disagree Disagree Neutral Agree Strongly agree

4. Group videoconferencing systems would be useful in my office.

Strongly Disagree Disagree Neutral Agree Strongly agree

5. Group videoconferencing systems would be useful so that I could conduct business from home.

Strongly Disagree Disagree Neutral Agree Strongly agree

6. Group videoconferencing systems would be useful so that I could keep in touch with family & friends.

Strongly Disagree Disagree Neutral Agree Strongly agree

7. How much would you be willing to pay for this type of technology? (please enter the number of dollars)

_____ dollars a month

VIDEOPHONES:



Video phones are useful for individuals who are looking to integrate voice and video on a single device. This technology is often used for one-on-one calls, but also can be a used for group conference calls. This equipment typically lives on your desk and operates like a telephone.

**For your work projects, could this technology be useful for:
(please circle one answer)**

1. Saving time

Strongly Disagree Disagree Neutral Agree Strongly agree

2. Saving money

Strongly Disagree Disagree Neutral Agree Strongly agree

3. Improving communication with the people you regularly interact with?

Strongly Disagree Disagree Neutral Agree Strongly agree

4. Videophones would be useful in my office.

Strongly Disagree Disagree Neutral Agree Strongly agree

5. Videophones would be useful so that I could conduct business from home.

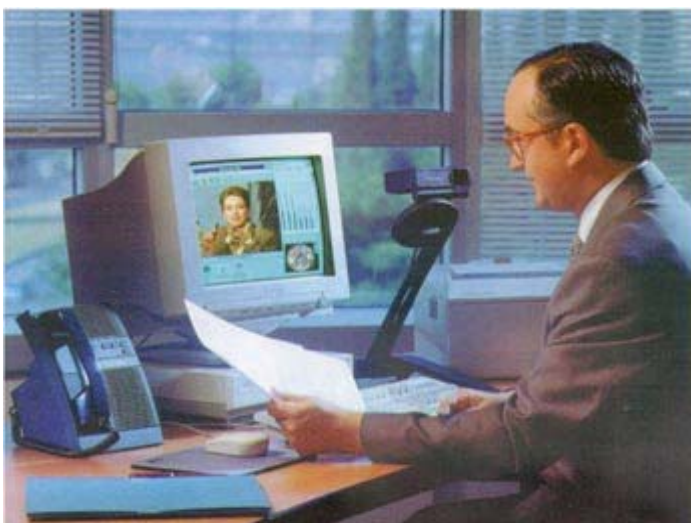
Strongly Disagree Disagree Neutral Agree Strongly agree

6. Videophones would be useful so that I could keep in touch with family & friends.

Strongly Disagree Disagree Neutral Agree Strongly agree

7. How much would you be willing to pay for this type of technology? (please enter the number of dollars)

_____ dollars a month

DESKTOP VIDEOCONFERENCING:

Desktop videoconferencing is useful for individuals to participate in remote meetings and collaborations. In order to use desktop videoconferencing, you need a desktop or laptop computer and a video camera or web cam. Desktop videoconferencing relays audio and video communications for one-to-one calls or group conference calls.

**For your work projects, could this technology be useful for:
(please circle one answer)****1. Saving time**

Strongly Disagree Disagree Neutral Agree Strongly agree

2. Saving money

Strongly Disagree Disagree Neutral Agree Strongly agree

3. Improving communication with the people you regularly interact with?

Strongly Disagree Disagree Neutral Agree Strongly agree

4. Desktop videoconferencing would be useful in my office.

Strongly Disagree Disagree Neutral Agree Strongly agree

5. Desktop videoconferencing would be useful so that I could conduct business from home.

Strongly Disagree Disagree Neutral Agree Strongly agree

6. Desktop videoconferencing would be useful so that I could keep in touch with family & friends.

Strongly Disagree Disagree Neutral Agree Strongly agree

7. How much would you be willing to pay for this type of technology? (please enter the number of dollars)

_____ dollars a month

8. If your department were to purchase desktop videoconferencing equipment, would you rather:

- Purchase and configure your own equipment and services
- Have a service provider package groups of equipment and services to buy
- Other (please specify)_____

9. New technologies have made it possible to integrate communication tools such as pagers, cell phones, emails, and video messages so that missed video calls will be sent to your email account or missed emails will be sent to your cell phone. This will reduce the number of separate message centers or inboxes that people will need to manage and keep track of. In terms of adopting any form of videoconferencing, how important would these centralized message centers be to you?

Very Important Important Somewhat Important Not Important

PART II: INFORMATION ON VIDEOCONFERENCING

Please check a response for each question.

1. Of the following list, which communication systems have you used within the last two years? Check all that apply.

- Telecommuting
- Room system videoconferencing
- Desktop videoconferencing with videophone
- Desktop videoconferencing with desktop computer
- None of the above

2. How frequently do you use any type of videoconferencing in your work?

- 0 times a month
- 1- 4 times a month
- 5 -10 times a month
- 10 or more times a month

3. If you had trouble using videoconferencing, in which functional areas did the problems occur? (check all that apply)

- Installation of software
- Installation of hardware
- Account set-up or activation
- Network or connectivity problems
- Performance problems (picture/sound quality)
- Other (please specify) _____
- No problems with videoconferencing

PART III - BACKGROUND INFORMATION. Please check the response that applies.

1. Affiliation with UNC (check all that apply):

- Faculty/Professor
- Staff/Administrator
- Graduate student
- Undergraduate student
- Other – please specify _____