Adoption of Communication Technologies in a Texas Health Setting

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ABSTRACT
Advances in communication technologies generate new opportunities for collaboration. With each technological innovation, we acquire a greater capacity to share information, resources, data, and reinforce best practices. Certain technologies, such as e-mail, the Web, video, and teleconferencing may reduce the need for travel and expensive long distance bills. This is an important development for groups of people working together across distances. The Texas Statewide Coordinated Statement of Need (TX SCSN) project, funded by the Texas Department of Health (TDH) Bureau of HIV and STD, is a multi-year project assessing the need and utilization of services for people living with HIV or AIDS throughout the state. In an effort to ensure effective communications with a dispersed volunteer group, the project used several communication technologies. The purpose of this paper is to describe communication technologies employed by the TX SCSN. We describe each communication technology, the underlying rationale, as well as the extent to which they were adopted.

Keywords
Communication technology, Health communication

Introduction
Advances in communication technologies generate new opportunities for collaboration. With each technological innovation, we acquire a greater capacity to share information, resources, data, and reinforce best practices. However, substandard communications may result in ambiguity and mistakes that harm people and inflict higher costs. For instance, Parker & Coiera (2000) report that communication problems are one of the leading causes of hospital deaths. The challenge for health communication professionals is to develop messages and delivery systems that increase quality communication.

The need for effective communication and collaboration is particularly acute for health studies. Effective communication technologies are centered on user characteristics and learning preferences. Healthy People 2010 recommends a multidimensional approach using a variety of communication channels (USDHHS, 2000).

Despite different approaches to studying communication technology, there is agreement about factors that influence its adoption. First, there is recognition that computer applications should be designed around the needs and patterns of users. Second, technology should be easily accessible and well organized. Third, users should possess a moderate level of self-efficacy about their ability to use a specific technology (Ackerman, 2000; Zhang, 2000).

The level of social replicability that can be achieved in several advanced communication technologies is limited by a variety of social and technical factors. Ackerman (2000) advises that social-technological gaps exist between the social needs of computer users and the technological capabilities of computers. Computer applications do not generally approximate human activity that is highly flexible, nuanced, and conceptualized. Olson & Olson (2000) conclude that, in the context of collaborative work settings, available communication technologies are insufficient.

We focus on efforts to implement different communication technologies in an on-going health project. The Texas Statewide Coordinated Statement of Need (TX SCSN) is a multifaceted effort dedicated to developing and testing a client needs assessment instrument and guide, collecting data, and assisting stakeholders with analysis and interpretation of their needs assessment data. Needs assessment is important because it allows agencies to set priorities based on an empirical understanding of trends, barriers, gaps and duplication of services. The objectives for the TX SCSN are ambitious, yet they represent many potential circumstances health professionals
may encounter as they use communication technologies more frequently to serve a growing, information hungry population.

The purpose of this paper is to describe the communication technologies employed by a small, geographically dispersed, federally mandated, volunteer group. We proceed in the following manner. First, the TX SCSN organization and legislative background is outlined. The legislative and organizational framework influences the adoption of communication technologies by establishing the general objectives and incentives for using different communication technologies. In the second part, we describe each communication technology and the underlying rationale for using each. The TX SCSN experience suggests that it is still too early for a small, dispersed, voluntary organization to exclusively rely on the Web or videoconferencing. More time is needed to help users incorporate such advanced technologies in their communication patterns. It is hoped that our experiences will contribute the process of cultivating a comprehensive understanding of implementing communication technologies in dispersed populations such as the TX SCSN.

Background of the TX SCSN

The TX SCSN project, funded by the Texas Department of Health (TDH) Bureau of HIV and STD, is a multi-year project assessing the needs and utilization of services for people living with HIV/AIDS throughout the state. It is administered by the United States Health Resources and Services Administration (HRSA), Department of Health and Human Services (DHHS). The Bureau of HIV and STD Prevention, Texas Department of Health, awards the SCSN Project grant to the Texas Woman's University, Department of Health Studies.

The HRSA mandate requires documented evidence of effective needs assessment by service providers funded under the Ryan White Comprehensive AIDS Resources Emergency (CARE) Act of 1996 (Public Law 101-38) (HRSA, 2000a). Ryan White CARE Act (RWCA) legislation authorizes the federal government to support the provision of both medical and social support services to persons living with AIDS. Recipients of RWCA funds are required to participate in the SCSN process (HRSA, 2000b).

The federal authorizing legislation permits state control over the specific organizational framework. In 1996, the initial project year, a workgroup, established at a joint Ryan White CARE Act Title I and II meeting, determined that a steering committee and contracted staff format would be used to implement the SCSN in Texas. Sixteen members were invited to serve on a steering committee. New members are selected on the basis that they contribute to a reasonable representation of various providers and clients across the state. The project office is housed on the Texas Woman’s University (TWU) Denton campus, approximately 40 miles north of Dallas and Fort Worth.

It is important to note that the steering committee consists of volunteers, who are located throughout the state and represent a wide range of demographic characteristics. Additionally, within the TX SCSN staff and steering committee, there are small workgroups consisting of three to five people. For instance, there is the data workgroup, which is also dispersed, and works closely with the programming staff in the development of a dedicated needs assessment database application.

The TX SCSN’s initial task was the development of a guidebook called “A Guide to Conducting A Needs Assessment” and a validated client needs assessment instrument. The instrument is available in both English and Spanish languages and has been distributed to approximately 200 people throughout the state. The guidebook serves as a tool to help agencies plan and implement the needs assessment instrument. This is important because the validated instrument has been adopted as a model for use across the state. Second, it reduces the need for local service providers to develop and test their own instrument. Third, use of the needs assessment instrument by local agencies helps to fulfill RWCA funding requirements.

Communication Technologies and the TX SCSN Project

The TX SCSN employed several types of communication technology to establish convenient and effective communications between project staff, steering committee, TDH, HRSA, and stakeholders across the state. Among these were e-mail, teleconferencing, videoconferencing, a Web site, and a proprietary database application.
E-mail

Electronic mail was the among the first communication technologies implemented within the TX SCSN. E-mail is widely used in the health arena. Taylor & Leitman (2001) found that more than half of practicing physicians in the U.S. use e-mail to communicate with colleagues and 13 percent exchange e-mails with patients. E-mail is often used for distributing health surveys, receiving legislative action alerts, accessing daily health news, and discussing research findings. Email is credited with increasing communication and expanding the social networks of those who use it (Howard, Rainie & Jones, 2001).

E-mail allows staff and steering committee members to communicate with each other quickly and at a very low cost. While most steering committee members had existing e-mail accounts when joining the TX SCSN, not all had a high self-efficacy about using the technology. During the first year of the TX SCSN, a few stakeholders, primarily from rural areas were unable to access this technology. However, current programs, such as the Telecommunications Infrastructure Fund (see http://www.tifb.state.tx.us/), are making communication technology services available in rural Texas.

Teleconferencing

The TX SCSN determined that telephone communication was sufficient for many purposes. Teleconferencing allows participants from multiple locations to dial into a common phone link and communicate with each other in real time. Teleconferencing is widely used by health professionals because it facilitates meetings with widely dispersed participants. Using this technology, meetings are held by health researchers, funding agencies, educators, and teams of collaborators around the globe.

Teleconferencing was initially implemented by the TX SCSN to set agendas for impending face-to-face meetings. Participants were contacted through e-mail communication to determine times and dates for teleconference calls. At the time of each teleconference, participants used a toll free number and joined the meeting from their home, office, or mobile phone.

Videoconferencing

The dispersion of the TX SCSN staff and steering committee made videoconferencing an appealing technology to use for meetings. Videoconferencing allows multiple participants to communicate with each other in real time audio and video from any number of locations. Videoconferencing required some participants to travel to a dedicated site where equipment was available.

Videoconferencing has been used in telemedicine, such as tele-psychiatry, since the mid 1990's (Junnarkar, 1998). TWU uses videoconferencing technology in many of its classrooms and finds it an effective alternative to face-to-face meetings. Olson & Olson (2000) and Garrison, Anderson, & Archer (2000) found that videoconferencing among individuals with established relationships did not result in work that matched face-to-face work. Importantly, they conclude that trust is difficult to establish using videoconferencing.

The TX SCSN used videoconferencing technology in the summer of 1997. Videoconference participants commuters to one of four locations, including TWU sites in Denton, Dallas, and Houston and a Texas government site in the Capitol Building in Austin. This resulted in several logistical issues, such as problems with traffic, parking, and locating facilities that rendered the preparation process somewhat burdensome. Additionally, the videoconference session was affected by a number of technical limitations including audio delays that contributed to people inadvertently talking over one another, and a failed video signal for a portion of a call.

Web site

Another communication technology employed by the TX SCSN project is the World Wide Web (Web). The Web continues to be one of the fastest growing communication technologies available, surpassing the growth of television, e-mail, teleconference, and all other communication technologies (Howard, Rainie & Jones, 2001). Web sites are quickly becoming an acceptable and, in some cases, indispensable approach for distributing
information. In particular, health related Web sites constitute an important and growing part of the Web, as over 52 million American adults seek health information online (Pew Internet and American Life Project, 2000).

The TX SCSN developed a Web site for distributing information to steering committee members, project staff, and stakeholders. Steering committee meeting minutes and agendas are available on the Web site, as are reports, history, contact information, project background, and links to other sites. However, the TX SCSN still distributes documents through traditional mail in addition to the Web site. In fact, the guidebook and validated needs assessment instrument, 152 pages combined, were mailed to agencies across Texas as well as made available electronically.

**Database Application**

Currently, agencies across Texas are collecting client needs assessment data, including demographic information, health status indicators, service needs, quality of care, and barriers to care, such as lack of transportation. In order for the TX SCSN staff and steering committee to effectively assist service providers with data analysis the data needed to be stored in a common system across agencies. Databases are collections of related information, such as medical records, or student grades, and are an effective method to store needs assessment data. The TX SCSN developed a dedicated database application that allows service providers to enter data locally and produce standardized reports. In the future, TX SCSN project staff will collect these data sets and analyze them to determine trends, gaps, and duplication of services across the state.

**Discussion**

Although the TX SCSN is an ongoing project, it is possible to make some preliminary and tentative conclusions about the adoption of communication technologies in a small, diverse volunteer organization. The TX SCSN staff and steering committee broadly accepted the use of e-mail. The relatively high adoption of e-mail is not surprising as it is the most widely used on-line activity. The TX SCSN staff uses e-mail daily to send meeting notices, agendas, travel arrangements, and project updates. Workgroups also use it to correspond about specific issues that do not require face-to-face meetings or teleconference calls. Nonetheless, there are still requests for information to be delivered by traditional mail methods. Naturally, the TX SCSN plans to continue using e-mail and it may be used more extensively as additional communication technologies are introduced.

Teleconferencing technology works very well for the TX SCSN, as it facilitates real-time collaboration without travel time and related costs. Teleconferencing has been and continues to be used frequently by the TX SCSN. The staff and steering committee find it especially useful for meetings that include approximately three to eight people, as conversation can flow and each person is able to participate. Teleconferencing has been successful because of its ease of use and lack of barriers.

Videoconferencing was not embraced by the TX SCSN project. Some of the barriers to videoconferencing’s adoption included user preferences for face-to-face meetings, limited videoconferencing resources that caused scheduling conflicts in some locations, and the inconvenience of traveling to videoconference sites. Additionally, to the extent that trust is typically developed as a consequence of reasonably close interactions and symbolic expressions, videoconferencing did not allow participants to observe physical expressions that are nuanced and important cues for assessing others (Olson & Olson, 2000). In some cultural settings a strong handshake or looking one in the eye is considered an important quality that may not be conveyed in videoconferencing. Consequently, it is not entirely unexpected that videoconferencing was not adopted.

Initial Web site use was less than anticipated so the project staff actively promoted the site. The Web site address or URL was added to TX SCSN correspondence including letterhead, faxes, and e-mails. Individuals were referred to the site when soliciting information from the staff. Furthermore, the site was presented to the local health department to demonstrate how and why a Web site can be a valuable tool. Second to e-mail, the Web site is currently the most utilized communication technology employed by the TX SCSN.

**Conclusion**

The TX SCSN project utilized many communication technologies during its first four years. The TX SCSN staff was flexible and continually evaluated the use of each innovation. As a result, some technologies were
abandoned, only those that were useful, and accepted by the steering committee and staff were employed. The Steering Committee rejected subsequent opportunities to use videoconferencing to date. The TX SCSN continues to actively employ a Web site, e-mail, teleconferencing, and a dedicated database application.

The use of communication technologies for projects such as the SCSN makes sense for many reasons. They offer the promise of being cost effective by reducing long distance bills and travel time, and allow for more communication, collaboration, and resource sharing for dispersed participants. However, these technologies experience different adoption rates. In some cases, there is resistance to changing communications patterns, especially when the benefits are not clearly understood or the learning costs are perceived as being substantial.

It is difficult to make broad generalizations about technology diffusion based on the experiences of the TX SCSN. Yet, the project is similar to other health projects that consist of volunteer participation from a variety of people. The project’s experiences indicate that increasingly sophisticated communication technologies may require leadership by experienced users or quick learners; those self-initiated individuals who are early adopters. These leaders can mentor and assist stakeholders in adopting communication technology. It may be important to develop explanations that predict matches between individual user types, such as volunteers in a health setting, and specific communication technologies.

The TX SCSN is a relatively young organization and because of its brief history, shared norms, values, and customs are still developing and beginning to emerge. The development of community, such as that generally practiced within many groups such as professional organizations, listserv participants, research scientists, physicians, or health educator groups, is important. The extent to which communication technology may be fully adopted is partially contingent on the existence of common ground, which enables individuals to understand shared vocabularies, roles, and context. Furthermore, the level of understanding and familiarity with these commonalities influences the level of communication that can be achieved in different technology formats (Olson & Olson 2000; Parker & Coiera, 2000).

Once we fully understand the factors that affect communication technology adoption rates, it may be possible to develop strategies that reflect the unique characteristics of each user. Ideally, this will permit greater numbers of people access to information, resources, and opportunities for collaboration.

References


