PEN-International Use of Videoconferencing Technology

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Abstract

The Nippon Foundation of Japan has partnered with the National Technical Institute for the Deaf at Rochester Institute of Technology to establish a worldwide university network serving deaf students: the Postsecondary Education Network International (PEN-International). This program is currently in the third year of a multi-year partnership to technologically link universities around the world. PEN-International seeks to apply state-of-the-art instructional technologies, improve and update technical curriculum, and update computer hardware and software for instruction. This paper reports on the successes and challenges that PEN-International has experienced using videoconferencing to (1) conduct business and planning meetings, (2) execute small and large group training sessions and seminars, and (3) conduct research interviews. Additionally, PEN-International's videoconference systems are described.

Introduction

In March 2001, The Nippon Foundation of Japan entered into a partnership with officials from the National Technical Institute for the Deaf (NTID) at Rochester Institute of Technology, Rochester NY, USA, to establish a worldwide university network to help improve education and to prepare deaf men and women for careers in a rapidly changing technological society.

This ambitious project, called the Postsecondary Education Network International (PEN-International), was created to technologically link universities around the world that serve deaf and hard-of-hearing students, primarily those in developing countries. Using the combined expertise of faculty and staff members from its host institution, NTID, and other world renowned educational experts, PEN-International has helped these universities develop state-of-the-art instructional technologies, improve their technical curriculum, and update their instructional computer hardware and software, including advanced videoconferencing systems. Opportunities for cross-cultural exchanges and faculty professional development and training are also hallmarks of the program.

Establishing the Network

In June 2001, Rochester Institute of Technology's National Technical Institute for the Deaf (NTID), Tianjin University of Technology (China), Bauman Moscow State Technical University (Russia), Tsukuba College of Technology (Japan), and The Nippon Foundation of Japan joined in a partnership to create an international network supporting the technical education of postsecondary deaf students from around the world.

PEN-International Goals

PEN-International's primary focus--faculty training, online learning technology, information technology, and instructional technology--are being used to:

- Improve teaching and learning
- Increase the application of innovative instructional technology

- Expand career opportunities for deaf and hard-of-hearing people.

In addition to the initial partners, PEN-International's current partners have been expanded to include: Beijing Union University (BUU), and Changchun University, (China); De La Salle University-College of St. Benilde, (Philippines); Charles University, (Czech Republic); and Ratchasuda College of Mahidol University, (Thailand).

About the PEN Partners

Japan's Tsukuba College of Technology (TCT) for deaf and visually impaired people was the first partner in the PEN-International effort. Tsukuba College was modeled after NTID when it was founded in 1987. Tsukuba's Division for Hearing Impaired offers state-of-the-art programs in design, mechanical engineering, architectural engineering, electronics, and information science. Selected faculty at TCT had extensive experience with videoconference technology and consulted with partner sites on the design of videoconference components of PEN-International multimedia labs.

China's Tianjin Technical College for the Deaf of Tianjin University of Technology (TUT)**,** the first technical college for the higher education of people who are deaf in China, was established in 1991. The college enrolls more than 125 deaf students who study technical disciplines that prepare them for productive membership in Chinese society. The college is the lead PEN-International partner in China and coordinates all activities in the country.

China's Beijing Union University (BUU)**,** founded in 1985, is a multidisciplinary institution offering humanities, science, social science, natural science, technological science, and management science programs to 12,000 students. The University's Special Education College was created in 1999 and serves more than 125 deaf students who study art design, decorating and advertisement, gardening, and office automation.

China's Changchun University's Special Education College was established in 1987. It is the oldest and largest postsecondary program for disabled students in the People's Republic of China. The college currently enrolls more than 200 deaf and hard-of-hearing students who study in the college's fine arts and graphic design programs. Graduates of the college are competing successfully in the workplace.

The Philippines' De La Salle University-College of St. Benilde's School of Deaf Education and Applied Studies in Manila is a leader in education for deaf students in that country through its academic programs, international linkages, and unique commitment to empower its citizens by preserving deaf heritage and nurturing Filipino deaf culture. The college offers a bachelor's degree in Applied Deaf Studies, the first of its kind in that country. Established in 1991, initially as a small program for deaf students, it has evolved into a formal program with 26 faculty members and 120 students.

Russia's Center on Deafness at Bauman Moscow State Technical University has been educating deaf students since 1934. In the early 1990s, the university administration expanded its programs and services for deaf students and established the Center on Deafness. Presently, approximately 250 students study in various programs across the university as well as in compensatory programs at the Center.

The Czech Republic's Charles University in Prague is the oldest university in central Europe. Founded in 1348 by King Charles IV, the University enrolls 41,000 students at the bachelor's, master's, and doctoral levels. Among the University's population are 120 students with special needs, including 24 students who are deaf.

Thailand's Ratchasuda College of Mahidol University is the first and only education institution in Southeast Asia dedicated to providing tertiary education for deaf men and women. The College, created in 1991, consulted with worldwide leaders in education of deaf students in formulating its curriculum. Ratchasuda College enrolls 89 students who are deaf.

Implementation and Importance of Videoconferencing

A key element of the PEN implementation strategy is the use of instructional and information technologies to form the infrastructure for an international collaborative. The vast distances separating partner universities and the need for direct visual communication among people who are deaf led to the selection of videoconferencing technology as a solution to long distance communication and training.

Additionally, the PEN development plan called for multimedia learning laboratories at each partner site that would serve as "smart classrooms" for the local

university and also provide for videoconference connections between and among partner sites.

Multimedia Computer Laboratories

PEN-International's leadership team works with individual institutions to establish multimedia computer laboratories with videoconferencing capabilities to support student learning and faculty-developed technology-based teaching solutions. To design these labs, PEN-International officials have brought teachers and technical experts from each partner university to NTID to meet with technical experts and to observe firsthand the variety of multimedia classroom configurations that have proven successful for educating deaf students at NTID.

The PEN multimedia labs at partner institutions have been outfitted with smart classroom technology for instructional presentations, including computer projector displays, videotape and DVD display capability, high-speed access to the Internet (sufficient for IP videoconference connections), local area network capability for sharing files, and 12-18 student computer workstations. Each lab is also equipped with a powerful videoconference system, ISDN and IP capable. All the labs contain faculty workstations for the creation and implementation of instructional technology solutions.

All the equipment and software acquired for the labs, including videoconferencing systems, is determined by PEN partner faculty and purchased from local suppliers. All partners were able to locally acquire PolyCom videoconference systems that match or exceed the system used at the PEN offices in Rochester, New York.

Labs built at partner institutions offer faculty a teaching/learning environment with the latest instructional technology. When not used for classroom instruction, the labs are available to deaf students for independent work. Videoconferences can be scheduled at any time for seminars and instruction.

Uses of Videoconferencing at PEN-International

During the first three years of operation, PEN-International has made extensive use of videoconference technology to support business meetings, training, and research.

Business Meetings

In order to manage a program as far-flung as PEN-International, it has been necessary to communicate regularly with partner sites. While email has been a blessing in this regard, there are occasions when face-to-face communication is a must. At such times, videoconferencing is utilized to conduct business. For example, in June of 2001 a delegation from Tianjin University of Technology (China) was trained on ISDN and videoconference technology at NTID. Technical experts from NTID and China discussed a variety of videoconferencing options. Upon their return to China, Tianjin University of Technology acquired a PolyCom videoconference system and had ISDN lines installed within the PEN-sponsored multimedia learning lab.

The first connection to the Chinese university was surprisingly simple and direct. Calls were placed to China on a regular basis for ongoing discussions regarding the establishment of the PEN-China program. Videoconference calls to China normally had three or four participants at each site, with translators and interpreters attending as needed. The quality of the signal has been excellent for the duration of the typical call.

This model set the standard for most business meeting calls conducted by PEN-International. Because of the number of partners, such meetings occur on a weekly basis to Japan, three sites in China, and the Philippines. Holding face-to-face meetings would be prohibitive were it necessary to visit each PEN site.

Training

Videoconferencing has been used extensively to conduct “distance training” at partner institutions. For example, PEN delivered its first training and workshops via videoconference to the Philippines. This was the very first training offered by PEN. The program for the deaf at the College of Saint Benilde was in the process of establishing a

new curriculum and expressed the need to consult with NTID administrators and faculty regarding their options. As a result, PEN prepared three comprehensive seminars that focused on “Facilitating and Monitoring Student Progress,” “Issues in College Entry,” and “Issues in Developing a Technology Curriculum.” The PEN Web site was used to post the workshop agendas, participant bios and contact information, and related resources to prepare participants for the guided discussions. A total of nine NTID faculty members participated along with 12 members of the CSB faculty.

At the conclusion of these seminars, exact transcripts were produced from audio recordings of each session and these transcripts were posted on the Web, along with summation comments from both organizations. Additionally, evaluation forms were distributed to CSB participants to obtain their critique regarding the significance of the information and ease of communication. The results of these evaluation efforts were used to modify the procedures in future training sessions.

This format for training became the operating procedure for PEN videoconferences related to training and teaching. To date, several such sessions have been held. Of particular note was a remote training session that was conducted in November 2002, on the second day of a national conference in China, on deaf education and technology. This seminar, titled, "How to Facilitate Classroom Communication,” was conducted by NTID professor Sidney Barefoot directly to Tianjin University of Technology, where 28 faculty, staff, and administrators came together to focus upon postsecondary education.

In addition to site-to-site conferencing, PEN has “bridged” to its sites in two different countries to conduct videoconferences. During the 2003 International Technology Symposium held at NTID, videoconferencing technology using PEN labs in

China and the Philippines proved to be a highlight of the program. During two consecutive evenings, video seminars on "Using Technology for Educating Students Who are Deaf" joined more than 75 faculty members from Manila, Beijing, and Tianjin with NTID faculty members who offered the interactive training.

Research Interviews

PEN works to assist partner sites with the formulation of policy guidelines for the postsecondary deaf education within their respective countries. In consultation with researchers and demographic experts at local universities, a qualitative research project was initiated to determine the current situation of deaf students at the tertiary level in the People's Republic of China.

The effective collection of qualitative research data requires face-to-face interaction between a researcher and informant. Sending a researcher out of the country to collect such data is extremely costly. However, videoconferencing provided an alternative means for data collection that was much more cost effective.

During 2003, interviews of faculty, students, and administrators were conducted to develop recommendations for the government of the People's Republic of China. Interviews were conducted with 15 members of the Tianjin University of Technology and Beijing Union University communities as well as with government officials. These interviews were conducted from the USA PEN lab to the PEN Multimedia Labs at TUT and BUU, and the videoconferencing equipment in those labs.

The format of these interviews closely followed established protocol for such qualitative research designs but was done via videoconferences. The connections to partner sites permitted direct "face-to-face" communication, utilizing spoken and sign

translators and interpreters. The interviews were video recorded and transcribed for analysis by the research team.

Data collected in these interviews is now being analyzed and a final report will be presented to the Chinese government in October 2004.

Videoconference technology dramatically increased the options of scheduling interviews that met the needs of informants. Such flexibility would be impossible without a long visit to China.

The PEN-International Videoconference System

PEN-International world headquarters is housed within the NTID complex on the RIT campus. RIT/NTID were early users of videoconferencing and as such have in place the infrastructure to support sophisticated ISDN and IP videoconferencing systems. There are eight rooms within NTID's buildings that can be used for videoconferencing, with seating capacities from four to 490 persons. There are three ISDN channels servicing NTID, providing a range of 56 to 768 Kbps for transmission speed. The ISDN lines originate from the NTID Instructional Television Department master control room and can be directed through existing cabling to each of the venues. The NTID technical services group maintains an internal Web site for the scheduling of calls.

The PEN videoconference system is located within the (14-person capacity) Nippon Foundation Training Room, in the PEN office suite. A Polycom View Station EX, with three video cameras, projected and flat panel television displays, and a Bose audio system provide a very flexible platform that meets the needs for the majority of PEN calls. Additional equipment in the room to support meetings and training includes an Internet-connected laptop, a "Smart Whiteboard" for interactive control of projected

computer displays, and audio and video recording capabilities, along with DVD and VHS video playback systems. Additionally, there is a Polycom speaker telephone system on separate line for direct phone calls to remote sites.

The network supporting the Nippon Foundation Training Room is capable of utilizing either ISDN [H.320] or IP [H.323] protocols. However, ISDN remains the preferred protocol simply because the speed and synchronization of IP remains slightly less than acceptable, especially when sign language is used by participants.

Future Uses of Videoconference Technologies

Videoconference calls for meetings and training are now routine PEN practice, and are utilized for communication between partners and within home countries as well. In the future, PEN will expand the use of videoconference systems for the delivery of courses to students and faculty between partner sites. Because of the availability of videoconference systems and high speed Internet access within each of the PEN-International Multimedia Labs at each partner site, it is possible for teachers and students to participate in “blended” course presentations across international borders and time zones.

References

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Author's Note

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