TELECOMMUNICATIONS FOR EDUCATION IN IGC

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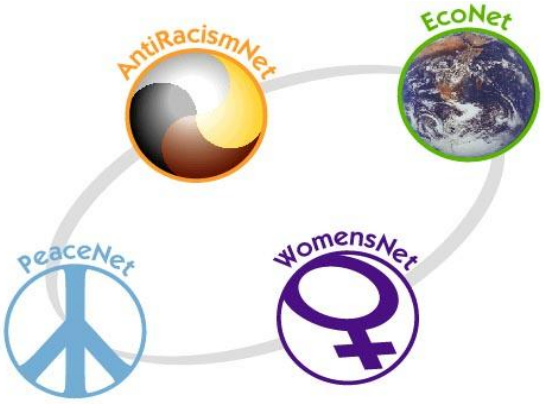
ABSTRACT

Over the years thousands of people got connected to information and, most importantly to each other, via IGC's services. For many it was their first introduction to the online world and for many organizations the early use of digital collaboration tools had a significant and positive impact on their growth and effectiveness. Initially, the IGC service used dial-up modems and a command line interface. Later, IGC used the Internet and the World Wide Web.

Helping to foster and support the development of similar services around the world was a priority for IGC, and the organization was a founding member of the Association for Progressive Communications. Other APC members were the first, or among the first, online and Internet Service Providers (ISPs) in their country. Today APC is a vibrant NGO with member organizations in dozens of countries, operating and supporting programs covering a wide-range of progressive issues with a focus on access and equity using communications technology.



INTRODUCTION

IGC Networks and Education In the early '80s people from four San Francisco Bay Area non-profits (ARC Foundation, Center for Innovative Diplomacy, Community Data Processing, and Foundation for the Arts of Peace) came together around a vision of a computer network to support the work of individuals and organizations working to reduce the risks of war and to promote peace. As a result of that collaboration, PeaceNet was launched. Another early online network, EcoNet, joined with PeaceNet and the project became the Institute for Global Communications (IGC). It then became a project of the Tides Foundation.

IGC INTERNATIONAL CONNECTIVITY

IGC runs its own hardware and Unix-based software, providing the full range of telecomputing services: electronic conferences, on-line database, and electronic mail The system is accessible from the Internet, Sprint Net, and direct dial. We are also part of the Association for Progressive Communications (APC) which consists of IGC and seven other coordinated networks inEngland, Canada, Australia, Russia,Sweden, Nicaragua, and Brazil. Users in those countries, and some neighboring countries, connect directly to those seven machines to participate in electronic mail and conferencing with all APC partners. The total APC user community is more than 10,000 users. The APC machines phone each other periodically throughout the day and night to exchange new information over high-speed modems. At the completion of the phone call, all e-mail is immediately routed to e-mail boxes/user accounts and all networked conferences are automatically updated. The APC is realizing one of its main purposes in making international telecomputing affordable to organizations and schools.

TELECOMPUTING FOR EDUCATION

IGC proposes to develop a software environment based on interconnectivity, and by so doing, hopes to create an environment that fosters new material development which will, in turn, foster wider educational use of telecommuting.

The software not just for one network or project; it is a system design that provides a common, powerful platform for many educational networks. The technology will transform telecommuting into a far more flexible medium to support the development and easy dissemination of new educational materials and new styles of education.

USER SOFTWARE

The IGC user software has two major goals. The first is to provideeasy and dependable access to the IGC-Internet network servers. The second goal is to support teachers, students, and other educators in their collaborations on the network by providing an easy-to-use, inexpensive integrated environment.

Educational telecomputing will flourish when it is easy, through e-mail, bulletin boards, and databases, to share documents that include illustrations and data, mixed with text, all freely able to be edited by participants using readily available software. This ismore than simply an aesthetic requirement. Students, perhaps without fully developed reading skills, who are struggling to learn difficult concepts, need as few distractions and as many forms of representation as possible. This is why illustrations, drawings, boxed items, underlining, and italics are an important part of textbooks

Based on several years of experimentation and experience with telecomputing in public schools, Some of these principles are applicable to any public school network, while others may be specific to conditions . These guidelines generally fall into two categories: network architecture and user interface. Network architecture refers to the design underlying the basic network links and transport mechanisms, while user interface refers to the screens and menus with which users interact directly. Although the two are to some extent interrelated, it is often possible to modify the user interface to meet the requirements of a particular audience even though the underlying network architecture remains the same

DATA ANALYSIS IN IGC

The data analysis component of the software is based on a column-oriented spreadsheet called a data table. For example Teachers and students enter, edit, and review data via the scrolling data table. Each column within the table has a definition that includes a title, a description, and a type (integer, number, string, category, formula). As an example of a formula column, a Degrees Centigrade column can be filled in automatically as a result of a calculation on the Degrees Fahrenheit column. The data module provides the following additional functionality

Support of data templates. Templates are data tables directly connected with curriculum activities whose format cannot be altered, thus ensuring compatibility with data from other classes. Teachers and students can enter data into existing templates and create their own templates

Cutting, pasting, and merging. Teachers and students can easily combine data from collaborators on the network into a composite set of data

Statistics. Summary statistics can be calculated and displayed for each column in the data table, thus facilitating data analysis. Count, sum, max, min, and standard deviation are a few of the statistical calculations available .

Querying. Teachers and students can define a query in order to create a subset of the data. The query is built using the Query By Example interface standard and supports multiple column criteria connected by AND and OR statements.

Sorting. Users are able to sort data based on multiple column criteria.

Graphing. The software supports the range of graph formats commonly used in education, including pie, bar, line, histogram, and scatter plots. Multiple data sets are displayed on a single graph. These graphs will be incorporated easily into the integrated document

TELECOMMUNICATIONS FOR EDUCATION

In education, telecommunications generally refers to the use of personal computers to send and receive information through a school wide network or standard telephone lines. Many services are available through telecommunications. This section provides an overview of the applications and services valuable for education.

Electronic mail

Electronic mail (email) provides a paperless procedure for sending and receiving messages. The messages are entered into a computer using a keyboard and sent through a modem or network to an external computer (often a mainframe computer that is located in another city or state). The messages are stored on the external computer or server until the addressee signs on to the same system (such as FIRN or America Online) and “opens” the mail. In most cases, email messages can be sent at any time and addressed to one or more people. When email messages are received, they can be read, printed, or saved on disk. Messages can also be forwarded to others. The cost of using email varies, based on the system and the type of connection. If a phone line is involved, there may be a cost for the time connected.

Transferring files as attachments

Most email providers will allow you to send documents, files, and video via an attachment. Generally there is a button on the toolbar that will allow the user to attach the document to the email. Usually the file has been compressed, or made smaller, to reduce the time necessary for it to transfer. The receiving computer may need a special program such as Stuffit Expander or WinZip to restore the file to its original form so that it can be used.

Instant messaging

Instant messaging (IM) differs from email in that IM software is able to detect if a specific person you wish to communicate with is currently online. If they are, your message will immediately pop up on the intended recipient's computer screen. Popular IM software includes AOL Instant Messenger, ICQ, IRC, and Yahoo Messenger.

Electronic bulletin boards/conferences

An electronic bulletin board is similar to its traditional counterpart. Depending on the location of traditional bulletin boards, people post messages or announcements; others can read the messages and post responses. For example, a bulletin board in a teachers' lounge often contains meeting agendas or requests for help with special projects.
Electronic bulletin boards and conferences also provide a forum for messages, notes, questions, and answers. They differ from email in that the messages are not addressed to specific individuals; instead, they are posted for all to read. These conferences are often international and focus on specific issues. For example, conferences may focus on world peace, sports, or educational activities for special education. Teachers and students can participate in interchanges to enhance their knowledge, ask questions, or respond to different perspectives.

Research databases and web sites

Most telecommunications systems offer access to documents and databases located on the Internet. These resources are usually current, providing access to information with very little turnaround time between collection and publication of the information. Since the databases are electronic, many provide the luxury of conducting keyword, title, and author searches that can help locate desired information much faster and more efficiently than traditional methods. Through telecommunications, these searches can be conducted from home or school. The Florida Information Resource Network (FIRN) provides electronic access to all of the libraries at Florida's universities and community colleges. You can conduct searches in the library catalogs and access several large databases, such as the Educational Resources Information Center (ERIC).

Chatting and videoconferencing

On-line chatting refers to a two-way interactive exchange through telecommunications. This, however, is not a vocal exchange. Instead, two or more people are online at the same time and send messages back and forth. In the chat mode, part of the screen will display outgoing messages. At the same time, the other part(s) of the screen will show the incoming messages. Teleconferencing is also possible on the Internet if the appropriate audio and video hardware and software is available.

ADVANTAGES OF TELECOMMUNICATIONS

Telecommunications is changing not only the way students learn, but also when they learn, where they learn, and who teaches them. Through telecommunications, the typical classroom is no longer bound by four walls, but open to include interaction among students, teachers, and experts, from around the world. Learning experiences can be shared from many varied sources. This section highlights some of the advantages schools can derive through the use of telecommunications.

Builds on existing technology

Compared to other educational media, the hardware and software required for telecommunications are minimal. The ongoing costs of accessing telecommunications systems are also reasonable. Thanks to national and international networks for education, students and teachers can obtain a wealth of information and communicate with others throughout the world at little or no expense.

Promotes collaboration and cooperative learning

Telecommunications provides many opportunities for students to work cooperatively, both within their own classes and with groups comprised of students at different schools. Teachers who have implemented cooperative learning with technology-supported activities endorse it; research supports the use of group interactions to promote positive social interchanges and increase instructional effectiveness.

Improves communication skills

Telecommunications can enhance learning by providing unique opportunities for students to practice, demonstrate, and critique written communication skills. Communicating from a distance is quite a different experience than communicating in person. Students soon learn to sharpen their communication skills in order to get their points across to peers in other cities and countries. Telecommunications also offers a forum for students to share their manuscripts and stories. Many teachers have been impressed by the effort students put into their writings when the students realize that their work will be shared with their peers in other schools.

Enhances multicultural education

Telecommunications makes it feasible to connect students and teachers in national and international exchanges. These links enable students from varied backgrounds to construct cultural bridges by investigating common issues from different perspectives. Students throughout the world can communicate daily about lifestyles, politics, careers, and so on. Although it is certainly possible for students to exchange letters via regular mail service, the computer networks are usually more meaningful because the feedback is fast, helping the students to stay focused on their ideas, projects, and interchanges.

Increases motivation

Telecommunications inspires students (and teachers) by making learning exciting and relevant. Students generally find it motivating to correspond through telecommunications with peers and experts who would be inaccessible through other means. The literature abounds with articles of students getting “turned on” to learning through telecommunications.

Saves on resources

By communicating electronically, less paper is needed. Of course, some electronic messages may be printed out, but less paper is needed and an envelope is not required. Additionally, email eliminates the cost of postage.

Increases access to experts

Many schools have participated in programs that provide students with access to experts on science, language, technology, or other areas. On-line conferences are also a good avenue to contact experts in specific fields.

Eliminates phone tag

Electronic messages can be sent any time of the day or night. The messages wait until the recipients sign on to the system and open their “mailboxes.” This procedure enables users to send messages at their convenience. Read receipts acknowledging that messages have been received and read are also available on some systems.

Provides current information

After a book is written, it may take a year before it is printed and becomes available in libraries. CD-ROM technology provides a wealth of information, but the discs are generally updated only on a yearly or quarterly basis. The best means to access current information is through telecommunications. Some services are

continuously revised, providing up-to-the-minute information.

Reduces isolation

Teachers often feel intellectually stranded in their classrooms with little time or opportunity to interact with their peers. Through telecommunications, educators can easily and inexpensively continue their professional growth by interacting with others through email or special interest conferences. Telecommunications also reduces the isolation felt by students and teachers in rural schools.

Increases self-esteem

Computers and networks do not prejudge people on the basis of their race, background, physical abilities, or appearance. Many shy, self-conscious students have blossomed through the anonymity of telecommunications.

Supplies faster communications

Messages can be sent to hundreds of people throughout the world within a few seconds. Users are not dependent on the reliability or schedules of postal services. In the amount of time it takes to hand write and deliver an office memo, electronic messages can easily be distributed, read, forwarded, and returned.

Aids in administrative tasks

For administrators, telecommunications can serve as managerial and organizational tools. In most email systems, messages can be grouped and stored in electronic folders for easy retrieval. In addition, school records, such as attendance and grades, can be easily and quickly transmitted between institutions..

SUMMARY AND GENERAL OBSERVATIONS

While there are already some meritorious examples of successful educational telecommuting and telecommunications, the educational community is only beginning to realize the exciting potential of this medium. Some of the most notable educational telecommuting and telecommunications successes include international connectivity. Students and teachers need increased access to telecomputing, as well as better and easier-to-use telecomputing tools. Getting people on-line is not enough; they need to understand and value the educational purposes for which they are on-line. Training support needs to be present to produce more effective users. Educational/program goals are the driving force behind effective educational telecomputing. Even the best and easiest-to-use tools cannot and should not replace the creator of the learner's environment. It may be appropriate to create special-purpose networks in some cases. However, when they are created, this should be done in such a way that, should wider or global connectivity become desirable at some later point, it would be easy to establish the connection. Finally, collaboration among all segments of the educational telecomputing community is essential to provide the greatest benefit. Such collaboration needs to allow for and support decentralization and individual differences when appropriate. Bill Leland is Program Director of the Institute for Global Communications. He has worked for many years in the areas of communication and information processes, organizational development, and conflict resolution/building collaborative relationships.

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