IOWANET Update

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"How come space is so dark if it is occupied by trillions of stars that are all so bright like our Sun?" asked a Des Moines second grader. His question was answered by three very different people: a physics teacher, a high school physics student and a retired attorney. All gave slightly different answers; the student received a rich and immediate response to a question that could not be answered with local school resources.

This student's opportunity was made possible by his school's participation in the IOWANET computer conferencing network. The following article will help teachers understand and appreciate the structure of IOWANET and the way in which it will be implemented. We will also provide examples of how students are already using this powerful technology in the classroom to network state-wide and nationally.

Structure of IOWANET and PSInet

IOWANET is the subordinate state network of PSInet (People Sharing Information Network), a national computer teleconferencing network for teachers, their students and other educators. PSInet is funded by the National Science Foundation, and IOWANET by a grant to Drake University from the Roy J. Carver Charitable Trust.

The PSInet project consists of two national networks. The first connects the departments of education in all the states and U.S. territories, the federal education offices in Washington, and about twenty national professional and developmental organizations such as the NEA and the Triangle Coalition.

The second national network consists of interconnected servers, one in each state and U.S. territory, all connected to a national server in Ames, Iowa. A server is a computer which manages information exchange among computers that are connected to it by phone lines. The national server handles all information exchanges among the state servers which link down to regional servers. The regional servers are connected to workstations in local schools.

Implementation of IOWANET

The purpose of the IOWANET project is to install an educational teleconferencing network to serve the communications needs of Iowa's K-12 teachers and students. A server will be placed in each Area Education Agency (AEA), and all local school buildings will be connected to it. Each of these fifteen area networks will be connected to the state server at Drake, which in turn is linked to the national server in Ames, Iowa. By a process called *shadowing*, all teacher and student users have access to information on all the state and regional networks in the U.S. provided by the approximately 70,000 current users.

The Carver grant provided for the installation of a computer training laboratory in the Education Building at Drake. The lab is now equipped with both IBM and Macintosh computers. The grant also covers the cost of one set of software for each local school building or other organizational unit, one day's training for a local building representative, and $100 per building paid to the local AEA to cover network connections and other installation costs.

At the end of the first year of the project, AEA networks have been established in AEAs 2, 3, 11, 12 and 15, and approximately 450 workstation users have been trained. Area networks have their own unique conference structures, and teachers are using these for such curricular areas as science, mathematics, health and social studies. Students and teachers are sharing information, resources and learning strategies and are engaged in cooperative learning projects with schools in Iowa and other states.

It is anticipated that servers will be installed and training workshops conducted for system operators in Fall 1993 in AEAs 5,6,9,10 and 14. Training workshops for teachers will also be scheduled for early fall. Workstation connections and teacher training in the other AEAs will accelerate when the Macintosh version of the operating software becomes available October 1.

Plans are underway for local school building installations in schools in AEAs 2, 3, 11, 12 and 15 that were missed in 1992-93 because they have Macintosh computers. Teacher training workshops will be scheduled, and each building representative will be issued the new software. Equipment and software are now available to permit teacher training to be conducted in well equipped local school computer laboratories.

The project will also connect to the network at least one workstation in each of the state's private and public colleges, community colleges, universities and major museums. IOWANET has also been designated a primary communications network for several state projects including the Star Schools Project, Move the Mountain Project and the E-SET project of the Extension Service at Iowa State University.

Global Linkages

IOWANET is linked to the global network, INTERNET. IOWANET users may now exchange messages on INTERNET; other service features of the INTERNET will be added gradually. When the IOWANET installation is complete, every Iowa student and teacher will be able to communicate with any student or teacher in the nation and the world, as well as with resource persons at colleges, universities and museums that are linked to the system. The operational features of the network and toll-free server support provided by Iowa's AEAs make it possible for these communications to occur at little or no cost to student or teacher users at local school workstations.

Benefits of IOWANET

The PSInet system accommodates four research-supported basic thrusts in education: (1) the Constructivist Paradigm of learning, (2) use of cooperative learning strategies, (3) shift of locus of control to the classroom level and (4) the use of efficient technologies to amplify learning resources. The system dramatically reduces the isolation of teachers and their students in terms of grade level, curricular subject and geography.

The system facilitates professional communications among teachers, consultants and principals and is especially useful for communications between local schools and their AEA offices. Private messages may be sent between individuals. The conference/session structure of the system permits communications among persons affiliated, or joined to these

special interest groups. These wide ranging communications include announcements of upcoming workshops and conferences, exchanges of curricular and instructional materials, and requests for sources of information on specific subject matter questions.

Current Classroom Uses of IOWANET

In addition to the example cited at the beginning of this article, students are using the IOWANET system extensively for communications among widely dispersed schools. They conduct surveys, carry out teacher-supervised cooperative projects and dialogue with peers in distant schools.

Students in Des Moines area schools started a conference on health. Each month a selected health topic is highlighted. Student surveys are conducted, the students exchange information on topic-specific questions, and they pose questions on the system that are answered by a health professional who has agreed to be a ''speaker'' for that month.

Students in Northwest Iowa are conducting a study of the Little Sioux River. Teams from schools along the river go once a month to a selected site and record biological, chemical and earth science data. Back at school they enter the data in the workstation computer and send it to all the other teams. Each team prepares data tables and graphs. When these are studied, a dynamic picture of the river emerges. Student motivation is enhanced by the ready availability of data and reports from the cooperating teams.

Students all over the country are conducting surveys on topics related to their classroom studies. A class in Lacey, Washington, conducted a survey on student knowledge about, and attitudes towards AIDS. A class in New York conducted a survey on musical interests. Students in a small school in Nebraska recruited students all over the U.S. to participate in a study of radon emissions. They tested over 5000 sites and recorded the data in the system by zip code where it is readily available to any user.

Students in an Ohio school were studying the trails used by European pioneers who settled in the West. The class was divided into teams and each selected one of the four main trails. They recruited students in schools along each trail to study and prepare reports on local sections of them. The reports were shared on the network. Teachers reported high levels of student motivation and interest, and also significantly higher levels of topic knowledge.

Conclusions

As students and teachers learn how efficient and user friendly the IOWANET system is, their use of it is accelerating. Experience has shown that there are significant benefits to using the system in terms of student motivation and learning. Its educational possibilities are bounded only by the inventiveness of those using it.

References

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