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EDITORIAL

Distance education initiatives in elementary and secondary schools are faced with many of the same issues facing distance education programs in higher education, corporate settings, and the military. Not surprisingly, the attempts of educators from all of these arenas to enhance learning and deliver education to underserved populations via distance experience both barriers and successes.

This issue of DEOSNEWS offers the second in a series of papers on elementary and secondary distance education presented at the "Best Practices in K-12 Distance Education" conference held at The Pennsylvania State University, April 13-14, 1997. The conference was designed to provide a broad overview of elementary and secondary distance education initiatives in various school settings across the United States, thus encouraging further discussion about the issues related to teaching, learning, and administration of distance education in the schools. Presenters, which included teachers and administrators from K-12 schools and higher education involved in distance education projects, provided examples of several state and interstate networks.

Last month's issue of DEOSNEWS, the first in this special K-12 series, featured a description of a distance education algebra course for high school students using low-cost audioconferencing offered through the University of Texas Migrant Student Program (see file number 99-00003).

The article in this issue of DEOSNEWS focuses on TEAMS, a staff development approach to delivering education to elementary and middle school students via satellite. The project director, district director, and an elementary teacher from an urban school in the District of Columbia discuss how active teacher participation and the use of team teaching affect the success of this project.

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TEAMS DISTANCE LEARNING: PROMOTING EXCELLENCE IN EDUCATION

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BACKGROUND

The original design for the TEAMS Distance Learning program designed in 1990 was based on a few significant premises:

1. America needed to significantly improve the level of mathematics and science instruction in schools. Several national studies and reports issued in the 1980s reinforced the fact that most students

were not motivated to pursue science and mathematics careers after graduating from high school.

2. Research studies showed that the upper elementary grades were a critical turning point for many students. Mathematics and science instruction in grades 4-6, which was primarily textbook driven, often inhibited any further desire to excel in these subjects at the middle and senior high school levels.

3. Mathematics and science instruction needed to be constructivist in nature, providing challenging hands-on opportunities for students and teachers to become active, motivated participants in their own learning. A participatory learning environment was critical for program design.

4. High standards of instruction should apply to all students, and the technology used to support the delivery of exemplary pedagogy must be cost-effective and available to all schools regardless of fiscal resources.

5. Traditional staff development opportunities for teachers rarely resulted in transfer of learned skills to the classroom. A cost-effective system needed to be developed that allowed for mentoring and modeling of exemplary instruction followed by immediate application of learned skills by teachers in their own classrooms. To achieve success, teachers have to see the value in adapting their teaching styles to support constructivist learning approaches.

6. A new delivery vehicle (for education) and completely new interactive distance learning design needed to be developed in order to positively influence the pedagogy of a critical mass of instructors during the decade of the 90s.

All of the above needs served as the basis for the distance learning design for TEAMS Distance Learning. TEAMS is directed at long-term systemic change in instruction at the critical elementary grade levels.

THE DISTANCE LEARNING NETWORK

TEAMS Distance Learning is a national instructional program delivered via satellite and funded since 1990 by four consecutive Star Schools grants from the U. S. Department of Education with fiscal and management support from the Los Angeles County Office of Education and major educational partners. Originally, TEAMS started as a large urban school district consortium serving the instructional needs of Boston Public Schools, Detroit Public Schools, District of Columbia Public Schools, and the Los Angeles Unified School District. The large district of Charlotte-Mecklenberg in North Carolina was added to this urban district coalition. In the last nine years, the program has expanded to encompass state partners in Arizona, Georgia, Missouri, New Mexico, and Utah, as well as many counties in the state of California. Presently, TEAMS Distance Learning serves approximately 145,000 students and 7,000 elementary and middle school teachers in twenty states.

A critical design feature of the network is the requirement that each partner designate a staff member as the TEAMS Regional Technology Coordinator. These coordinators have been essential to the success of the program because they provide local support which includes infrastructure logistics, face-to-face staff development sessions for teachers, local publicity and recognition, liaison to TEAMS management staff, timely distribution of materials, and internal knowledge of bureaucratic procedures.

The Delivery System

TEAMS Distance Learning programs are delivered via Ku-Band satellite from the studio facilities of the Educational Telecommunications Network (ETN). ETN is owned and funded by the Los Angeles County Office of Education in Downey, California. Districts and states participate via one-way satellite transmissions and two-way audio using an 800 line. Most of the partners rely on local instructional television, cable, or microwave (ITFS) networks to receive the satellite signals and make the last mile connection into the classrooms. As a result, TEAMS has invested very little grant money in infrastructure needs, choosing instead to concentrate on instruction and teacher training.

Instructional Design and Content

From the very beginning, the designers of TEAMS Distance Learning made a commitment that the instructional modules would be highly interactive, involving students in motivational, hands-on classroom learning. Furthermore, the modules had to be designed so that the classroom teacher would become an active facilitator of distance learning instruction before, during, and following the televised program.

Because the involvement of the classroom teacher was deemed critical to success, TEAMS designers wrote instructional modules which require the studio instructor to "team teach" with the teachers at the receive sites. Unique to TEAMS is the concept of "Your Time" segments during the live programs in which the distance learning instructor goes off-air after challenging students to explore and expand upon what they have learned. The classroom teacher takes over during these "Your Time" segments and facilitates a hands-on activity based on instructions provided by the studio. Following the "Your Time" segments, the studio instructor comes back on-air and takes calls from students across the United States to chart responses to the classroom activities and to determine if the students have grasped the concept being taught.

TEAMS has a powerful instructional design due to active teacher participation and support. Teachers recognize that they are learning techniques that will allow them to teach their subjects more effectively in the future. Teachers value TEAMS because it gives them a long-term staff development opportunity within the confines of their own classroom.

TEAMS Distance Learning has focused primarily on serving the elementary grades and grades six and seven in middle schools. From its initial focus on mathematics and science, TEAMS has expanded into history/social science, reading, language arts, and technology instruction. In the 1998-99 school year, TEAMS delivered 178 programs. In mathematics, students in grades 1-8 participated in a rich and rigorous program focused on algebra and geometry. TEAMS science, for grades 4-7, delivered balanced programs reflecting the diversity of science content, disciplines, teaching strategies, and scientific thinking processes. TEAMS science delivered modules of instruction for heat energy, chemistry, earth processes, weather, and fast plants. The history/social science strand for upper elementary grades produced modules on the student as media evaluator, as citizen, and as historian. The "Windows on My World" series for grades 4-6 explored a variety of reading and writing strategies to assist the reader to better understand a piece of literature. The "Reading: Basic to Success" series for grades K-3 provided teachers with strategies for a comprehensive reading program for the primary grades.

Participating teachers are provided with a variety of support in addition to the live, interactive programming via satellite. Each instructional module consists of a series of forty-five minute student programs -- typically two per week for a total of eight per module -- preceded by a staff development program for the participating teacher. Teachers receive extensive lesson guides and specific guidance from the studio instructor on how to prepare for the instructional module. Classroom instructional kits for most modules are required for the hands-on activities. Office phone hours are available for teachers who have additional questions.

Since 1994, TEAMS Distance Learning has evolved into a distributed learning model that integrates satellite, online, and multimedia delivery systems. TEAMS online support consists of an award winning Web site (<http://teams.lacoe.edu>) that provides participating teachers with a wealth of resources, activities, and projects that enhance and expand upon the satellite-delivered learning modules. Each TEAMS distance learning instructor has developed a virtual classroom for his or her instructional modules. In 1999, TEAMS produced and delivered an online reading course for primary grade teachers. In the near future, TEAMS will employ Web software to ultimately deliver all of its instructional modules via the Web.

TEAMS has achieved success in the past nine years because of a strong commitment to instructional excellence in the design and pedagogy of the distance learning programs. TEAMS programs reflect national curriculum standards and provide direct support for national educational goals in mathematics and science. TEAMS has always been innovative in adapting/adopting new technological solutions to enhance the delivery of instruction as well as to ensure that many schools across the United States have access to the programs.

CHALLENGES IN PLANNING AND IMPLEMENTATION

TEAMS Distance Learning has overcome many obstacles over the past nine years. Access was a problem in the early years. Many schools that wanted to participate didn't have access to a satellite dish and were not getting the support of other local networks to provide the signal. In some instances, the problem was with the local educational bureaucracy holding up site downlink installations with paperwork demands and insisting upon more expensive installation procedures. As demand for TEAMS programs increased, however, more and more districts and states were able to leverage local television, cable, and microwave systems to provide the signal to the schools.

Time zones are a continuing concern with any national distance learning network. TEAMS transmits from California, and a 9:00 a.m. transmission may work well for the western and midwest partners, but it requires partners in the eastern part of the United States to adjust lunch schedules to accommodate the program.

Finding the right combination of skills in a distance learning instructor has also been challenging. A TEAMS distance learning instructor must be not only an exemplary classroom teacher with a strong understanding of content and pedagogy, but she or he must be able to project effectively on the small screen. It is a unique combination of skills, and unfortunately, many highly skilled classroom teachers do not make successful studio instructors.

Maintaining long-term support at the school level is an ongoing challenge for the Regional Technology Coordinators. When principals, teachers, or other key supporters of the program are

transferred or retire, the challenge is to enlist support from the new principal, train new teachers, and convince the new staff member that the program should be continued. Districts are always taking on new initiatives, and without continued vigilance, established programs get re-prioritized, downsized, or eliminated.

Rapidly evolving technology, particularly for the online Web-based applications has been a particular challenge, both fiscally and instructionally. TEAMS Distance Learning continues to deliver exemplary instructional modules to local TV and microwave networks because the bulk of its client schools find the technology both accessible and affordable, whereas online programming requires a much higher investment in equipment and teacher training.

The challenge is to provide teachers with the professional development needed before the technology can become an integrated part of the teacher's lesson planning. While the number of teachers with access is rapidly changing, most teachers in the TEAMS network still have little or no classroom access to the student and teacher resources available to them from the TEAMS Homepage.

MEASURES OF SUCCESS

Has TEAMS Distance Learning been successful? A major gauge of success is the value placed upon the program by classroom teachers and students. The rapid growth of the program from 1990 to 1997 is a strong indication of the perceived worth in the eyes of the end user -- the classroom teacher. TEAMS is now the largest elementary distance learning program in the United States, with unlimited growth potential in the future.

TEAMS Distance Learning conducted an extensive evaluation of the program over a seven year period. Information and data were collected for the evaluation through two primary methods: survey instruments and focused interviews at selected TEAMS schools. Dr. Carla Lane from the Education Connection in California was the lead evaluator for this TEAMS evaluation.

A student progress form was sent to every TEAMS teacher as part of the survey instrument. The form collected basic information on gender and participation in Title I, LEP, Gifted, and special education programs. The form asked each TEAMS teacher to describe the degree of the outcome for each student that could be attributed solely to using TEAMS. Teachers ranked 7,299 students on the following attributes:

- Improved Content Knowledge and Skills
- Improved Critical Thinking and Problem Solving
- Improved Language Skills
- Increased Interest in the Subject Area
- Improved Quality of Work
- Increased Interest in School
- Improved Attendance

- Improved Behavior
- Takes Responsibility for Own Learning
- Greater Confidence as Learner
- Higher Self-Regard

A series of multiple linear regressions were performed on the data. The results were statistically significant. Teachers throughout the U.S. saw improvement in content knowledge and skills, improved critical thinking, problem solving, and language skills, increased interest in the subject area, improved attendance and behavior, improvement in the responsibility of students for their own learning, and a positive increase in student self-regard.

The pattern that emerged during the evaluation also created a new model for teacher preservice and in-service. By the fourth year of participation, TEAMS teachers reported that they had fully adopted the instructional methods embodied in the TEAMS programs. They were comfortable with teaching challenging standards-based instruction and had begun to apply their new skills in other curriculum areas. Furthermore, as a result of their participation in TEAMS, many of these teachers became mentors and models for the new TEAMS instructors at their schools.

FUTURE PROJECTS

TEAMS has made the transition from a distance learning program using only satellite as its delivery method to a distributed learning system with a design that incorporates both synchronous and asynchronous learning applications. For two years the TEAMS Online Applications Group has been discovering and designing creative Web learning applications that support and enhance the live, interactive satellite instruction. The TEAMS Homepage (<http://teams.lacoe.edu>) received several prestigious national awards for its instructional design and virtual classrooms. TEAMS will expand on this model in the future and develop a powerful student-centered distributed learning system that incorporates satellite transmission, multimedia enhancements, and online applications. In the not too distant future, all of the TEAMS instructional modules will be offered online, and TEAMS will design and implement an extensive new array of online courses for teachers and students.

TEAMS Distance Learning has, over the course of nine years, evolved into a unique distributed learning program with a proven record of success with students and teachers. The emergence of new instructional technologies and delivery systems will continue to challenge and enhance the program, but the core values of improved instruction for students and teachers will remain the focal point for TEAMS Distance Learning into the twenty-first century.

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