

Research-Based Distance Learning Services in the Northern Pacific

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INTRODUCTION AND BACKGROUND

In the developed world, lifelong learning is considered necessary in the fields of education and health. Web-based technologies are used to update skills and provide access to the latest research and information. Asynchronous, synchronous, and self-paced open-learning courses provide professionals with the ability to meet the continuing education requirements for maintaining their credentials without taking them away from the workplace. They are accepted as an effective means of providing information on the latest instructional strategies, medical research, and procedures.

The remoteness of the Pacific region presents significant challenges to providing high-quality, interactive, distance education. These geographic, economic, cultural, linguistic, professional, and technological challenges require creativity and flexibility in the design of courses and in instructional methods. This article explores the experiences of educators in providing distance-learning opportunities throughout the region between 1998 and 2006.

In 1997, the U.S. Department of Education awarded Pacific Resources for Education and Learning (PREL) a 5-year grant to provide distance-learning programming for students, teachers, and adults in Hawai'i, American Samoa, the Republic of the Marshall Islands (RMI), the Federated States of Micronesia (FSM), Guam, the Commonwealth of the Northern Mariana Islands (CNMI), and the Republic of Palau. The project was also tasked with improving the telecommunications infrastructure to make the delivery of distance-learning courses possible, and with building local capacity in the use of educational technology.

Teachers and students in the Pacific are spread across islands and atolls throughout 4.9 million square miles of ocean encompassing six time zones and the International Date Line. Because the population is scattered across such a large area, telecommunications costs are high, and broadband Internet access is not

affordable beyond American Samoa, CNMI, Guam, and Hawai'i. The distance between the Pacific entities creates a need among educators and students for effective communication infrastructures.

The remoteness of islands, along with the local economic conditions of many of the developing nations in the region, creates an environment where the cost of supporting a technology infrastructure and ongoing connectivity is overwhelming. Sustained development of technology is nearly impossible without supplemental funding sources. U.S. states and territories are provided with supplemental funds under the e-rate program, which provides "discounts" for telecommunications services to schools, libraries, and rural health-care organizations. Unfortunately, the developing nations in the Pacific do not qualify for these discounts, and they lack the financial resources to provide reduced-rate telecommunications services for their education and health sectors.

Many Pacific teachers lack adequate professional training. In some jurisdictions, nearly half of the teachers do not even have an Associate's degree, yet opportunities for higher education and advanced courses are very limited. Teachers, administrators, and technologists need dependable access to high-quality educational resources to provide basic learning experiences, as well as to support professional development for the improvement of their education systems.

English is a second language in all entities in the region except Hawai'i and Guam. Limited English language skills present a challenge to users' contact with distance-learning providers and with communication between teachers and their students. Resources and services must be easily adaptable to various levels of language proficiency among teachers and students at different grade levels.

In addition to language differences, current instructional practice in many of the schools reflects the traditional, teacher-centered approach to teaching and learning. The self-directed, interactive, constructivist

approach, used by many distance-learning providers, is a completely new concept for many teachers and students. The effective implementation of this approach requires training and modeling in constructivist pedagogy, use of technology, and the implementation of teaching resources.

TELECOMMUNICATIONS INFRASTRUCTURE

During the past 6 years, the telecommunications infrastructure has been dramatically strengthened to support distance learning through a mix of both new and existing technologies such as cable television, radio, video, and the Internet. The high cost of bandwidth limits the use of video streaming and other technologies common in developed nations.

To address this issue, courses have been developed and delivered on multiple platforms. While creating courses with synchronous components has always been the goal, asynchronous versions have also been developed to meet the varying requirements of students across the time zones and with limited access to telecommunications. As Okamura and Higa (2000) note, the use of various technologies is required for effective distance learning in the Pacific. For example, high bandwidth components can be placed on CD or DVD and shipped out to students in advance, thus limiting download time.

In partnership with Pan-Pacific Education Communication Experiments by Satellite (PEACESAT) and local telecommunications and cable companies, PREL assisted in the installation of a videoteleconferencing (VTC) network to connect islands in the northern Pacific. This VTC network is made available for government, health, and education use. PEACESAT staff train local satellite station operators to operate and maintain the satellite terminals. This VTC network uses old geostationary operational environmental satellites (GOES) to provide low-cost telecommunications services throughout this region of the Pacific.

Partnerships have been established with governments, private businesses, local telecommunications companies, and international and national non-governmental organizations (NGOs) to improve the telecommunications infrastructure. These partnerships were responsible for making possible the delivery of more than 6 hours of educational programming per day

to local cable companies in 10 Pacific island entities from 2000 through 2006, and for increasing access to online courses.

MAIN FOCUS: CREATING EFFECTIVE DISTANCE LEARNING COURSES

Before beginning the project, PRELStar staff conducted a thorough needs assessment. This assessment included the needs of the students, the state of the educational system, the political and cultural environment, the telecommunications infrastructure available (along with planned improvements), funding availability, challenges to providing distance learning, desires of all stakeholders involved, and a review of previous distance-learning programs.

Once the needs assessment was conducted, instructional designers began to work with local educators, healthcare workers, and students on creating the courses. The goal of PRELSTAR's distance-learning program was to develop and deliver distance-learning courses that were equal to face-to-face courses and designed to improve teacher training and expand course opportunities for students.

Based on the information from this assessment, over a dozen teacher professional-development, adult-education, and student programs were developed and delivered beginning in October 1997. Initially, the delivery of courses included both asynchronous and synchronous video via satellite or cable with interactivity provided by phone or e-mail. As technology and Internet access improved, some courses were moved first to a Blackboard Learning System® course management system (CMS) and later to a Moodle CMS. Other courses involved a hybrid approach using various synchronous and asynchronous components.

The lack of face-to-face, or synchronous, components in distance-learning courses created major challenges in providing no significant difference in outcomes between synchronous and asynchronous courses, especially in courses involving teacher training. During 2002 to 2005, teachers in the region recommended increasing the amount of face-to-face or synchronous interaction through VTC in all of the courses. Teachers reported both face-to-face and VTC components were essential in the application of their learning in their classrooms.

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