# Case Study Report

# South Coast Telecommunication Project
# 96073

# Coos Bay, Oregon

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| Site Visitor: | Nicole Bartfai |
| Dates of Visit: | May 17-18, 1999 |

# PREFACE

The following case study report is being issued as part of TIIAP's ongoing evaluation initiatives designed to learn about the effects of TIIAP funded projects. This report is one in a series of twelve based on indepth case studies conducted in 1999 to study three subjects: (1) issues particular to rural communities (2) issues particular to urban communities, and (3) challenges in sustaining information technology-based projects. The case study reports give us evidence about the special challenges that each project faced and provide information for a better understanding of factors that can facilitate the success of such projects.

In addition to being urban or rural, the case study projects were selected because they involved distressed communities, represented innovative models for services, and affected measurable community outcomes. The case studies, conducted under contract by Westat, an independent research firm, consisted of extensive review of project files and records, interviews with project staff, representatives of partner organizations, and project end users. In addition to the 12 individual reports, a summary of findings across the projects is also available on the NTIA website.

NTIA wishes to thank the case study participants for their time and their willingness to share not only successes but also difficulties. Most of all, we applaud your pioneering efforts to bring the benefits of advanced telecommunications and information technologies to communities in need. We are excited about the case studies and the lessons they contain. We believe that these projects provide a unique insight into the variety of ways to eliminate "the digital divide" which exists in our nation. It is through the dissemination of these lessons that we can extend the dividends of TIIAP funded projects nationwide.

We hope you find this case study report valuable. You may obtain other case study reports, a summary of findings of the collected case studies, and other TIIAP publications through the NTIA website (www.ntia.doc.gov) or by calling the TIIAP office at (202) 482-2048. We also are interested in your feedback. If you have comments on this, or other reports, or suggestions on how TIIAP can better provide information on the results and lesson of its grants, please contact Francine E. Jefferson, Ph.D., at (202) 482-2048 or by email at fjefferson@ntia.doc.gov.


Stephen J. Downs, Director
Telecommunications and Information Infrastructure Assistance Program

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| **Project Name** | South Coast Telecommunication Project |
| **City/State** | Coos Bay, Oregon |
| **Grant Recipient** | South Coast Education Services District No. 7 |
| **OEAM Number** | 96073 |
| **Application Area** | Education, Culture, and Lifelong Learning |
| **TIIAP Grant Amount** | $ 249,750 |
| **Match Amount** | $ 1,034,778 |
| **Date of Site Visit** | May 17-18, 1999 |
| **Site Visitor(s)** | Nicole Bartfai |
| **Abstract** | The South Coast Education Service District initiated a full-scale technology plan that encompassed three counties, which includes 10 school districts. The TIIAP-funded portion of the project involved the purchase of audio and document-sharing equipment, which allowed for interactive audio and document sharing. Also included in the grant were 20 video conferencing units that were placed throughout the districts, and the creation of the Virtual Learning Network. These three components were complemented with extensive training for teachers and other end users of the technology. Difficulties experienced by the project included inadequate planning in regard to the time and money required for various aspects of the project, difficulties with project partners, and video conferencing equipment, that proved difficult to connect and unreliable. <br><br> Despite several problems, the overall project affected district personnel, teachers, students, and the overall community. The audio and document-sharing stations reduced the cost and burden associated with the extended travel necessary in many rural areas. Overall, Internet access, access to resources, and teacher and student levels of technology literacy increased during the grant period, mostly due to the emphasis placed on training. The Virtual Learning Network provided resources for teachers and others with Internet access on how to use a variety of software applications. |

## A.        Background

### Community Characteristics

The South Coast Educational Service District No. 7 (SCESD) comprises three counties (Coos, Curry, and Western Douglas) that cover the entire South Coast region of Oregon. In terms of population, Coos County is the largest county and an estimated 32,000 of 62,000 residents live in the cities of Coos Bay, North Bend, Charleston, and East Bay. Other communities in Coos County are small and rural. Curry and Western Douglas counties encompass four school districts and are similar to the more rural areas of Coos County.

Coos County, as well as the surrounding counties, has experienced a decline in the overall population over the past two decades. With the decline in the logging industry and increased regulations on the fishing industry, employment in Coos Bay and surrounding areas has declined, and many young people are leaving the area for opportunities elsewhere. Accordingly, the portion of the population that is 75 years or older has increased 10 percent since 1990. Minorities, including Native Americans, represent only 6.4 percent of the population.[1]

### Project Overview

**Problems/Disparities the Project Was Designed to Address.** The poor socioeconomic conditions contribute to the disparities that exist for students. Due to the high poverty and high unemployment rates, students have limited access to computers at home. Likewise, students and teachers in the South Coast region have limited access to technology and other educational resources in the schools. In addition, Internet service was unavailable in the entire region prior to 1994. Without an Internet service provider (ISP), neither schools nor the community at large could access the World Wide Web.

Another problem the region faced was the great distances between communities. In order for teachers to access training at the main SCESD office (located in Coos Bay) or for district-level superintendents to meet, they must face a 5-hour round trip commute from one end

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[1] As reported by the Oregon Employment Department in the 1998 Regional Economic Profile for Region 7, Coos and Curry Counties and provided by project staff.

of the region to the other. Consequently, teachers, especially in these remote areas, have fewer opportunities for professional development and collaboration.

**Technical Approach.** The approach was implemented in two phases. The first was to build the regional telecommunications infrastructure and install equipment specifically designed to assist with distance learning and collaboration. The second phase was to train users, especially teachers. It was imperative that project staff train teachers to effectively use the equipment because their ability levels would ultimately affect students' learning experiences.

The first phase revolved around the creation of the South Coast Area Network (SCAN), designed to provide Internet access and related services to schools in the region. One year prior to the funded TIIAP grant, a group of district superintendents, community partners, and the SCESD invested in access servers, routers, modems, and telephone wires in order to provide Internet service to the local area. With ISP connection, schools had access to the Internet. In addition, at the time of the proposal, some 500 community members also had access to the Internet through SCAN. Project staff purchased two new servers for SCAN because at its peak, SCAN was serving all the schools and county offices, and had increased community subscribers to 1,800 members. This was not part of the original proposal, but due to the demand from schools and the community for access, project staff submitted a request, which TIIAP approved, to alter the original budget to include the purchase of additional servers. This equipment greatly increased the capability of SCAN and enabled more people to access the Internet. The additional equipment also enabled project staff to build the Virtual Learning Network (VLN).

SCESD also purchased interactive conferencing equipment to allow users to engage in real-time discussion without the extended travel. The proposal indicated three units would be purchased: one for the SCESD office in Coos Bay, one for the office in Curry County, and one for the South Coast Community College.[2] After testing several systems, project staff decided to purchase audio and document-sharing stations. These easy-to-operate units provided the most essential components to communication over long distances—audio and document viewing. Project staff decided to initially purchase only two systems.[3] One was placed in the Coos Bay office and the other in the satellite office in Curry County.

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[2] At the time of the proposal, SCESD had recently merged from three separate units into one that would be centrally located in Coos County. Currently, two of the regional offices have remained open: the main building in Coos County and their satellite office approximately 2 hours away in the southern part of the region.

[3] Due to the cost associated with the audio and document-sharing stations, SCESD decided to wait to purchase the units for Southwestern Oregon Community College, a partner organization.

Another component of building the infrastructure was purchasing and strategically placing 30 video conferencing units in schools and/or districts. After carefully testing and pricing units with necessary software, project staff realized only 20 machines could be purchased given the current budget. The selected computers were Dell 166 MHz Pentium with 32 MB RAM, 2 GB hard drive, speakers, CD-ROM, and a 33.6 KBPS modem. Each system had a color printer, scanner, video capture card, camera, and microphone/speakers/headset. Applications included Microsoft Office, FrontPage, and distance learning software—NetMeeting and CUSeeMe. (Both are video conferencing software that allow for real-time audio and video exchange.) These workstations allowed teachers to communicate with the SCESD, other districts, and other classrooms in the region without the extended travel time. The software provided on the machines also increased their capabilities to include web design.

The second phase of the grant trained teachers in the use of technology. This was accomplished through traditional on-site training activities, the VLN, and remote online discussions initially using NetMeeting and later using ICQ (I Seek You). (ICQ is a real-time, online communication tool that informs users who is on-line at any given time and allows you to contact them at will. ICQ can also be used for group meetings or conferences.) NetMeeting or ICQ enabled the trainer/consultant on the project to provide technical support to teachers using the video conferencing units. Traditional training occurred at regular intervals on word processing, PowerPoint, Internet, and other telecommunications and distance learning software. The VLN is a website that was created by volunteers and was designed to provide interactive learning opportunities via the Internet. The additional servers greatly increased the growth potential of the VLN. VLN has grown to include a drug prevention website, a virtual tour of TOP Class software, and a tutor to help users learn CUSeeMe.

**Anticipated Outcomes.** Project staff indicated several anticipated outcomes from their overall telecommunications initiative in their region. The project was designed to increase access for educators and students to National Information Infrastructure. By increasing access, project staff expected more students and teachers to have greater proficiency in using telecommunication. As teachers became more comfortable in using the equipment, students would benefit by gaining more exposure to the technology and greater proficiency in its use. This increase in proficiency would improve students' readiness for college and jobs requiring computer literacy. Project staff did not cite more specific student learning outcomes or teacher pedagogy outcomes.

Project staff anticipated that the interactive conferencing capabilities for the SCESD offices would limit travel time and reduce the cost associated with travel for district personnel. Also, with reliable audio and without the demand of travel, project staff felt educators, regional administrators, and other district personnel could increase their participation in collaborative learning projects. The video conferencing was also designed to improve collaboration. Project staff felt the video conferencing stations could increase communication between teachers and schools throughout the entire region. They hoped that teachers and students would use the technology to collaborate more frequently. Another anticipated outcome was to have all of their teachers trained to use technology.

**Project Status at the Time of the Site Visit.** The project continues to provide a range of services for district-level administration, teachers, and students. Each component of the project sustains a different level of productivity.

- The audio and document-sharing stations are used, on average, two to three times a week. They are used for meetings between the main and satellite offices for a variety of events (e.g., board meetings, curriculum conference calls, or discussion with the special education specialist). This approach greatly reduced travel time and project staff expects the system will continue to save money and time.

- The video conferencing units have varying levels of usage depending on placement. Some teachers use the system for video conferencing and for web design. Other teachers rarely use the unique capabilities of the machines and use the word processing components more frequently. At the end of this year, project staff indicated placement would be re-evaluated and machines might possibly be removed from some classrooms to better utilize the capabilities of the machines.

- The VLN is an on-going web site with many different links. At the time of the site visit, several of the sites were continuing to grow because of demand. For example, a drug intervention web site is flourishing because a local organization offered a small grant award to a volunteer to continue working on the development.

- The private sector of SCAN was sold in order for SCESD to be eligible for the e-rate program.[4] However, SCESD still holds on to the public aspects of SCAN.

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[4] In order to be eligible for the Federal e-rate program, an organization cannot be a for-profit organization. With thousands of home-based accounts, SCAN was incurring a profit that assisted with maintenance and upkeep of the server.

**B.**     **Community Involvement**

**Characteristics of the Grant Recipient Organization**

SCESD provides education-related services to three counties—Coos County (six school districts), Western Douglas County (one school district), and Curry County (three school districts). Services range from special education, to technology, to professional development training. At the time of the grant proposal, each county operated under a different Education Service District but through state reconfiguration, Coos County annexed Western Douglas County and later merged with Curry County. The main office remained in Coos County and a smaller satellite office with three full-time employees opened in the Gold Beach office in Curry County. Expanding the SCESD service area only heightened the need to find ways to limit driving time and increase communication.

TIIAP grant-related activities were supervised under the direction of the Office of Curriculum at SCESD. The project director worked closely with partners, contractors, and other project staff to coordinate project activities. Along with the TIIAP grant, the curriculum office at SCESD was supervising numerous other grants to improve learning for students, many of which provided technology-related funding through private foundations in the area. The project director has worked for approximately 20 years to obtain outside funding for the district and continues to leverage additional funding to improve the quality of education in the region. Since the time of the grant, a separate office for technology was created to handle the overwhelming need in the districts and schools for technology-related assistance. Most school/district budgets do not include money for a technology coordinator; therefore, many of the schools rely on SCESD to provide technical assistance. The key members of the project included the project director, a contractor that worked on technical issues and training activities, and several members of the technology office at SCESD.

**Partnerships**

During the visit, project staff indicated how important supportive partners were to the success of the project. Project partners ranged from other public institutions to volunteer organizations. As a service agency, the SCESD needed district superintendents to support the project, and this support was sought out early in the project. Partners included the following:

- **SCAN** was a for-profit ISP. They were responsible for installation and administration of the community access network for the entire SCESD area. Under the direction of the TIIAP project manager, SCAN enabled all schools to access the Internet and therefore have video conferencing capabilities.

- **Southwestern Oregon Community College (SWOCC**) is the local community college. At the start of the grant, SWOCC was launching its "Bridge" program, designed to reach high school students in the region that were in need of remediation during and after high school. Two professors from the business and technology school were brought onto the project to provide technical support as well as collaborate on developing the VLN. The VLN and the video conferencing were to be a mechanism used to provide students remediation opportunities in specific subject areas. Due to technical obstacles and retirement of staff, this portion of the project was not implemented (further detail will be provided in Section D).

- **Educational Software** of Oregon is a local developer of computer-based learning that provided SCESD with technical assistance and support in selecting, installing, and using the video conferencing equipment and software. They also assisted in the development of the VLN.

- **Cyberlynx** is a volunteer organization that started 5 years ago in Coos County. Due to the lack of computers and computer literacy in the area, Cyberlynx started by refurbishing old computers and training citizens on how to use the computers. It has grown to include other services such as providing technical assistance for developing and promoting the use of technology and developing community websites. The founder of the nonprofit organization contracted with the SCESD and decided to involve the volunteers to assist with website construction. Since the start of the grant, they have provided more than 5,000 free hours to the development of the VLN, testing of CUSeeMe, and other software testing including NetMeeting and TOP class.

- **Schools in the SCESD service area** provided part of the matching funds included in the TIIAP grant proposal. Several schools/districts received money for wiring and equipping schools with hardware and Internet connections. Most funding was from business donations and private foundation grants.

- **O'Conner & Co**. is the private consulting firm that assisted in all aspects of implementation, especially training, evaluation, technical aspects, and managing the VLN development.

**Community Outreach**

**Involving Community Stakeholders.** Several years prior to the advent of the TIIAP grant, district superintendents indicated on the annual district-level survey that improving technology was critical to improving student success. After recognizing the importance of

technology, SCESD staff met with the curriculum directors from all 10 local school districts and other interested district personnel (e.g., principals and superintendents) to determine the direction of the project. With district-level support, SCESD began work to fully integrate technology into the schools and into the community. The TIIAP project was one aspect of the overall plan to improve the status of telecommunications and infrastructure in the South Coast region.

The curriculum directors met on a monthly basis to discuss and make decisions regarding the status of most projects under SCESD (e.g., School-to-Work and Goals 2000). Another, more hands-on committee was established early in the TIIAP project to assist project staff in selecting equipment and software. Project staff, partners, and superintendents were welcome to attend the monthly meetings, although little involvement from teachers was requested early in the planning and development stages. Voluntary attendance ranged from 5 to 10 people, usually project staff, representatives from several partners, and one superintendent who took an active role in the project. Despite the limited face-to-face contact, those involved in the project did e-mail one another and talk via phone almost daily. In hindsight, project staff recognized the importance of mandatory meetings that included all partners and stakeholders for more effective collaboration.

**Project Outreach.** In order to ensure the inclusion of every district, video conferencing units were dispersed with at least one per district. Units were also placed in the Coos County Library and in several locations at the SCESD office in Coos County. Project staff determined the placement of these units and monitored how teachers used them. Based on their observations, several units were moved early in the project implementation stage because they were not being used. The teachers who received a unit were selected based on their interest and commitment demonstrated at training sessions. They were asked to sign an agreement with SCESD stating that the computer would be used only for the intended purpose; the agreement also discussed repair and service charges for damaged equipment.

Information was shared with SCESD staff, district superintendents, teachers, and other community members through a variety of approaches. SCESD advertised the individual success stories in newspaper articles and newsletters. Information about the project was also shared on the SCESD web site at http://www.coos.k12.or.us/index.html. Anyone with Internet connection can access this site, which also provides direct links to school websites and information on a variety of resources including the VLN. VLN included information on the video conferencing workstations along with tutorials on using the software.

**Training.** Teacher training, conducted by the contractor and other SCESD staff, was a major factor in the project. Project staff understood the importance of teachers who understood the equipment and how to integrate the technology in the classroom. Intensive training took place during summer workshops and several courses were offered in conjunction with other district efforts (e.g., special education and curriculum development). The majority of training was held during the regular school year as in-service and professional development activities. Training included Microsoft Word, Excel, PowerPoint, how to navigate the Internet, FrontPage, and NetMeeting. Six teachers from each district were selected for the initial 6-hour training with the video conferencing equipment.

Since the start of the project, technology training has become pivotal to the reform movement in Oregon. Now, technology training is a requirement for all new and veteran teachers in the state. Because of SCESD's past efforts to increase their teachers' ability to incorporate technology in the classroom, many of the teachers in the SCESD are prepared for the new reform guidelines.

**Protecting Privacy.** Protecting students from accessing inappropriate information on the web was of concern to project staff. In order to limit access, filtering software was placed on all SCESD servers. The software was updated daily and filtered over 100,000 sites. Another way students were able to access inappropriate material was through the video conferencing software, CUSeeMe. In order to limit pornographic material from being sent over CUSeeMe, the machines can only access sites in the directory. These two approaches have limited the amount of inappropriate material being accessed by students at school.

**C.       Evaluation and Dissemination**

**Evaluation**

An outside contractor was hired to evaluate the project, as well as to provide technical support and training to teachers. The evaluation was designed to evaluate the two goals of the project: (1) to increase student access to educational resources and opportunities and (2) to increase educators' use of telecommunications technology. Specific questions were designed to address these issues:

(1) Do educators and students have greater access to National Information Infrastructure?

(2) Do educators and students have great proficiency in using telecommunications?

(3) Are high school students able to reach higher levels of readiness for college and jobs requiring the use of computers and the Internet?

(4) Is there an increase in the participation by educators in regional administrative meetings, training, curriculum development, and collaborative learning projects?

Evaluation strategies included phone interviews of district personal, teacher and student surveys, a student Internet test, activity logs, student portfolios, sample web pages, and other anecdotal evidence of how the video conferencing computer systems were used by end users.

- **Phone interview with districts.** These interviews were used to determine the number of schools, educators, students, and computers connected to the Internet in each district. From that, the ratio of students to computers and the percent of computers connected to the Internet were determined. Several districts did not have the information and, consequently, school-level information was gathered from cooperating schools.

- **Student and teacher surveys.** The student and teacher questionnaires consisted of 11 questions. Respondents were asked how and with what frequency they used the computer and the Internet. The survey also asked how helpful the Internet was for classroom activities/schoolwork and one's overall education. Exhibit 1 presents the questions asked on the teacher survey. The student survey asked similar questions.

  Another survey, which was administered in October 1997, was designed to gather information on a teacher's level of access to the Internet. Exhibit 2 displays those questions.

- **Student Internet test.** The test was developed to accommodate both middle and high school students. During the site visit, project staff commented that the test was too basic for most high school students and some middle school students, and, if it were to be administered in subsequent years, they would increase its difficulty. It tested basic navigational skills and accessed whether the students were "literate." After a small sample pretest, the test was sent to all schools in the 10 counties and was completed by 367 students. The principals decided which teachers should administer the test. Not all schools participated in the test. Students were given written instructions that asked them to perform tasks common to Internet use (Exhibit 3).

- **Student portfolios, activity logs, and sample web pages.** Also included in the evaluation report was evidence of the individual impact of the project. For example, staff included addresses of websites created by students for school and

personal information and testimony from teachers heavily involved in the project.

The evaluation assessed the status of the telecommunications for the districts, individual schools, and teachers that were willing to participate. The lack of random sampling for each survey/test was problematic, which project staff acknowledged. Because the surveys were distributed at the end of the school year, many teachers felt they did not have time to complete them, nor did many have time to properly administer the student survey. Therefore, the teacher survey was mostly completed by individual teachers involved in the project or by respondents that had built relationships with SCESD, and likewise, the student survey was given in schools/classrooms more heavily involved with telecommunications. SCESD recognized that because the data were only collected from the schools willing to participate and from principals and teachers willing to complete the survey, it is impossible to conclude that the impact documented in the evaluation report actually reflects the entire district.

Another concern with the evaluation was the lack of baseline data collected prior to the start of the project. This information would have provided a better understanding of how the project progressed during the 2-year period. An attempt was made to collect information from teachers regarding the use of computers and/or the Internet in the preceding year, but it provided little information on how the computer/Internet was being used or why any change occurred. The problems found by having limited pre-intervention data were compounded by the fact SCESD had numerous technology-related projects occurring in districts and schools at the same time, and it was difficult to evaluate the activities of only one project.

**Exhibit 1. Teacher Survey**

**Community Access Project – Teacher Survey**

This is an anonymous survey being conducted in our region as part of a grant-required evaluation process.

Please answer these 11 short questions which should take only 5-10 minutes of your time. Kindly return the survey to SCESD by May 31, 1998. Thank you for your cooperation. It helps us to get and keep grants when we complete surveys as requested.

i.      **Teacher ID** _____ (enter your initials and the last four digits of your telephone number)

ii.      **School Name** _____

**1.**      **How many hours a week do you spend on the Internet?**

(a) ____ less than 5 hours    (b) ____ 5 – 10 hours    (c) ____ 11 – 20 hours    (d) ____ more than 20 hours

**2.**      **How many hours a week do you spend using a computer for non-Internet activities?**

(a) _____ hours at school     (b) _____ hours at home

3.      **What are the *top t*wo activities for which you access the Internet?** (choose <u>two</u> from the list)

(a) ____ e-mail    (b) ____ chat    (c) ____ surfing    (d) ____ research    (e) ____ games
(f) ____ downloading    (g) ____ web development

**4.**      **What specific information or materials did you get from the Internet that would have been very difficult or very time-consuming to get any other way?**

       (a) _____    (b) _____    (c) _____

       (d) _____    (e) _____    (f) _____

**5.**      **During the past twelve months, which of the following activities did you do?**

(a)    ____ Sent or checked e-mail
(b)    ____ Used the Internet to look for material to use in class
(c)    ____ Gave my students assignments that required the use of the Internet
(d)    ____ Posted some of my teaching materials on the Internet
(e)    ____ Posted some of my students' materials on the Internet
(f)    ____ Other _____

**6.**      **How helpful has Internet access been in doing your classroom activities?**

(a) ____ very helpful    (b) ____ somewhat helpful    (c) ____ not very helpful

**7.**      **How helpful has Internet access been to your overall education?**

(a) ____ very helpful    (b) ____ somewhat helpful    (c) ____ not very helpful

**(OVER)**

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**Exhibit 1. Teacher survey (continued)**

8.      **From your observations, in which of the following ways have computer-access and Internet-access improved students' performance?**

(a)  \_\_\_\_ None
(b)  \_\_\_\_ Their communication skills have improved
(c)  \_\_\_\_ Their assignments show more depth or breadth of subject matter
(d)  \_\_\_\_ Their group assignments are of a higher quality
(e)  \_\_\_\_ They get information or assistance from the Internet on subjects that are difficult for them
(f)  \_\_\_\_ They show more interest in technology
(g)  \_\_\_\_ They show more interest in current events
(h)  \_\_\_\_ They act more independently of their teachers in solving problems and doing assignments
(i)  \_\_\_\_ They make more contact with students from other areas
(j)  \_\_\_\_ Other _____

9.      **Over the last two years, what computer applications have you learned at school, in workshops, or on your own?**

(a)  \_\_\_\_ word processing (in Works, Word, etc.)
(b)  \_\_\_\_ spreadsheets (in Works, Word, etc.)
(c)  \_\_\_\_ databases (in Works, Word, etc.)
(d)  \_\_\_\_ presentations (PowerPoint, etc.)
(e)  \_\_\_\_ drawing (CAD, Draw, etc.)
(f)  \_\_\_\_ Internet skills
(g)  \_\_\_\_ network communications (Groupwise, Outlook, etc.)
(h)  \_\_\_\_ making web pages (HTML, Netscape Gold, etc.)
(i)  \_\_\_\_ programming (C+, Basic, VRML, etc.)
(j)  \_\_\_\_ video conferencing (CuSeeMe, VoxPhone, etc.)
(k)  \_\_\_\_ other (specify) _____
(l)  \_\_\_\_ other (specify) _____

10.     **Do you have access to a computer at home?**

(a) \_\_\_\_ Yes    (b) \_\_\_\_ No

10a.    **If yes, do you have access to the Internet from home?**

(a) \_\_\_\_ Yes    (b) \_\_\_\_ No

10b.    **If yes, do you have access to e-mail from home?**

(a) \_\_\_\_ Yes    (b) \_\_\_\_ No

10c.    **If yes, what is the source of your e-mail account?**

(a) \_\_\_\_ Your school's    (b) \_\_\_\_ Your own paid account    (c) \_\_\_\_ a free account (HotMail, etc.)

11.     **Other comments about the impact of computers or Internet access for yourself or your students.**

(OVER)

**Exhibit 2. Computer User survey**

## South Coast Telecommunications Project

**Computer User Survey**

Date _____

Location/School _____

Name _____

1A. When and where do you/did you have **Internet access**?

This year (9/1/97) ☐ At work ☐ At home

Last year (9/1/96) ☐ At work ☐ At home

1B. When and where do you/did you have **an e-mail account**?

This year (9/1/97) ☐ At work ☐ At home

Last year (9/1/96) ☐ At work ☐ At home

What group do you belong to?

☐ Administration/Support staff
☐ Teaching staff
☐ Counselors, librarians, etc.
☐ SCESD staff
☐ Other (specify)

2. What computer applications do you use at least monthly on a computer . . . **at work . . . .at home**

| | | at work | at home |
|---|---|---|---|
| 1 | Word processing | ☐ | ☐ |
| 2 | Speadsheets | ☐ | ☐ |
| 3 | Databases | ☐ | ☐ |
| 4 | Graphics | ☐ | ☐ |
| 5 | Presentations | ☐ | ☐ |
| 6 | Internet web browser | ☐ | ☐ |
| 7 | Conferencing | ☐ | ☐ |
| 8 | E-mail | ☐ | ☐ |
| 9 | Other (specify) | ☐ | ☐ |
| 10 | Other (specify) | ☐ | ☐ |

3. For which computer applications would you like to receive more training?

☐ 1 Word processing
☐ 2 Speadsheets
☐ 3 Databases
☐ 4 Graphics
☐ 5 Presentations
☐ 6 Internet web browser
☐ 7 Conferencing
☐ 8 E-mail
☐ 9 Other (specify) _____
☐ 10 Other (specify) _____

4. On what topics/activities would you most like to collaborate/conference with colleagues/staff **without having to leave your office?**

☐ 1 Share files on my/their computer
☐ 2 Work on budgets, curriculum, etc together
☐ 3 Have my class meet online with other classes
☐ 4 See others' schedules
☐ 5 Share/collaborate with other teachers
☐ 6 Learn/teach computer applications
☐ 7 Troubleshoot computer problems
☐ 8 Sit in on meetings/conferences happening elsewhere
☐ 9 Consult with experts/officials at a distance
☐ 10 Create web pages
☐ 11 Other (specify)

**PLEASE RETURN TO:**

**South Coast ESD**
**Curriculum**
**1350 Teakwood**
**Coos Bay, OR  97420**

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**Exhibit 3. Student Internet test**

**Internet Test**

i.      **Student ID _____** (enter your initials and the last four digits of your telephone number)

ii.      **School name** _____

**The following assignment is intended as a quick test of your skills in using the Internet. You will not be graded on this test and your identity will remain anonymous. Please DO NOT speak to anyone during this test, or try to get help from your neighbor. If you get stuck on any of the steps below, please circle the number of the step where you left off.**

1.    Log onto the Internet

2.    Type in the URL: http://telcom.coos.k12.or.us/directory
(be careful to type it exactly as printed here)

3.    Find the link to **"Coastal Life."** Go there.

4.    Then choose the link to "Arts and Entertainment."

5.    Find the link to **Coos Art Museum** and go there.

6.    Write down the name of the **current featured exhibit** _____

7.    Write down the **e-mail address for the museum** _____

8.    On the Museum's home page is the information on where the Museum is located. Copy the paragraph with the information on where the museum is located to your clipboard and paste it in the online survey form located at: http://telcom.coos.k12.or.us/sctproject/test.htm
(do not type it in – we want to see if you know how to use "copy and paste" functions with a browser)

9.    Enter a **student ID** as directed on the form.

10.   Select your **school district** from the drop-down list.

11.   Push the **"Submit comments"** button.

**YOU ARE DONE. PLEASE HAND THIS TEST TO YOUR TEACHER. THANKS FOR YOUR PARTICIPATION.**

Dissemination

Several times over the past year, SCESD staff presented to other state and local agencies on the technology initiative underway in SCESD. Staff also had the opportunity to participate in a technology summit that was held at the regional level, which the trainer/consultant presented via teleconferencing to interested parties at a project in Toronto. They also attended a conference with CyberSchool.

Project information was provided through mail-out materials and questions via e-mail and via the telephone. More recently, information was posted on the SCESD website. Information available includes final reports, evaluation materials, research of technology equipment that was used and tested at SCESD, and frequently asked questions to assist with more technical issues. Numerous organizations have requested project information. Having a website made, it was easier for others to gain access.

**D.      Problems Encountered**

**Partners/Stakeholders**

Overall, project partners collaborated successfully on the individual aspects of the projects. Unfortunately, one aspect of the project—collaborating with the community college to increase high school students' access to educational opportunities—was not realized. A firewall installed around the campus computer system limited the capability of the video conferencing equipment because the campus computers did not recognize any user attempting to enter the system; therefore, a connection could not be made with the college. Soon after the discovery of the firewall, the two professors at the college who had collaborated with project staff to write the TIIAP proposal retired. Without the professors to work with SCESD and the limitations on video conferencing with the college, work on this aspect of the project ended. Since that time, relationships with the college have continued to be strained, and little collaboration is taking place between the two institutions. Although no collaboration is taking place directly with SCESD, several other professors at SWOCC began work outside the campus firewall.

Another problem that plagued SCESD staff was the partial loss of political/administrative support following the turnover of superintendents. Since the beginning of the project, five local district superintendents have left their positions, and the superintendent at SCESD has changed three times during the time of the grant. Both situations created instability.

Given the innovative nature of the project, many of the new local district superintendents were not willing to avidly support it.

### Planning/Administrative

Project staff severely underestimated the time and money necessary to test equipment and fully integrate technology into the schools. Project staff commented, "in order to have meaningful use of the equipment, time is essential." Especially at the onset of the project, staff had to alter the schedule because each stage of the project—purchasing, configuring, and installation—took longer than expected. Prior to purchasing the equipment, hours of testing were required to determine the equipment best suited for the project. Oregon's Educational Software, a consulting firm, worked closely with SCESD technical staff and other project staff to select the equipment. These problems limited the time left in the original grant period to fully implement and evaluate the project. Consequently, SCESD was granted an extension to the grant period.

### Technology

The task of selecting equipment proved to be problematic. The equipment that was originally proposed was outdated by the time the grant was awarded. This resulted in more time spent to educate project staff as to the advances in telecommunications and the cost associated with the newest technological advances. Other concerns with the technology also developed throughout the project. Listed below are several technology-related issues encountered by SCESD:

- **Audio stations.** Once selected, the interactive teleconferencing equipment had few technical problems. However, people did experience trouble with audio pick-up due to the lack of extension microphones. This was easily corrected with the purchase of extension microphones that could spread throughout the conference room to make it easier for all meeting participants to join in meeting procedures.

- **Individual video conferencing units.** Each machine purchased had video conferencing capabilities and other software that allowed for on-going real-time communication. These machines had increased capabilities compared to other computers in most classrooms, but the cost associated with purchasing 30 machines exceeded the money budgeted. Therefore, only 20 units were purchased.

- **Training teachers on the video conferencing workstations.** Training provided on the video conferencing stations presented other unique problems. Applications such as NetMeeting and FrontPage were difficult for novice

computer users to learn and apply to everyday classroom practices. Another reason training was difficult on the video conferencing units was because video conferencing was difficult to replicate. Therefore, it was hard to show teachers how to establish connections or troubleshoot for problems. The video conferencing equipment did not meet expectations. This unreliability resulted in minimal use by some teachers selected to receive the equipment. These difficulties resulted in some teachers becoming discouraged with the workstations.

- **Technical problems with the workstation software.** A new version of the NetMeeting software was installed. Project staff had continual problems with machines crashing and decided to revert to the old version of the software. Unfortunately, this software timed out and project staff were forced to determine the problem. After hours of testing, staff located the problem and had to visit each site to fix the machines that had already been distributed**.**

- **Additional cost of establishing a connection.** Establishing an Internet connection with the servers in Coos Bay was a long distance call from most areas, which increased the cost associated with providing the service. In 1996, the local call region expanded and it became much simpler and less expensive to provide service.

### End Users and Community Support

Many schools and district have been working to varying degrees to integrate technology into the schools, but not all superintendents and/or principals have promoted the SCESD technology projects. For example, the largest school district in the SCESD region did not allow teachers to connect the video conferencing computers to the school local area network (LAN). Consequently, the teachers were forced to use analog telephone lines that resulted in an extremely slow connection. Due to the slow and otherwise poor performance of the video conferencing workstation, many potential users became reluctant to use the equipment.

During the site visit, teachers discussed several obstacles to integrating the video conferencing units. One was the time required to learn and integrate the workstations into their teaching. For many teachers, basic training was only a starting point to fully integrating the video conferencing stations. One problem was the limited time available in most teachers' schedules. It was difficult to get teachers to spend additional hours learning the more complex software necessary for conducting video conferencing. Another problem was integrating the other capabilities, such as web design, into class activities. In most cases, the video conferencing unit was the only computer in the classroom with advanced software such as FrontPage, which is used

for web design. Students could rarely use the machines, making it difficult to integrate them into lesson plans.

### Establishing Financial Support

SCESD is one of the more disadvantaged and rural areas in Oregon, and prior to 1995 the local school districts relied heavily on monies from local property taxes. At the onset of the grant, Measure 5 was passed, which limited the amount that could be collected through the local property tax, therefore limiting the amount school districts would have to fund educational expenses. SCESD had a difficult time because while they were attempting to implement an overall technology plan—costing additional funding—school districts were faced with limitations on their budget.

### E.        Project Outcomes

TIIAP funded a portion of the overall telecommunications project in the South Coast region of Oregon. The overall technology initiative at SCESD, including SCAN and other similar projects, had a tremendous impact on the availability of technology and the Internet in schools and throughout the community. However, not all of it was TIIAP-related. Therefore, the following section documents how the TIIAP-funded portion of the initiative affected end users, the grant recipient and project partners, and other potential beneficiaries.

**Increased Access and More Resources Available for End Users.** SCAN was already providing Internet access at the time the grant was awarded, but the addition of two servers allowed more schools and community members to gain access to the Internet. Since 1996, the number of schools connected to the Internet has increased significantly. During a 1998 inventory of schools, every school, and almost every library, was shown to have at least one connection to the Internet. The VLN provided additional resources for students, teachers, community members, and others with Internet access. The tutorials created by project staff demonstrated how to use a variety of software and other online courses such as Basic Internet Skills and Web Publishing 101. The VLN also provided information on the interactive video conferencing capabilities in the SCESD region. Project staff uncertain to what extent the VLN was being accessed via the Internet, but several of the tutorials are used at district training sessions.

**Teachers Trained on the Use of Technology and How to Integrate It Into the Classroom.** Training was held throughout the entire grant period and continues to be a major focus of the technology initiative. Training was held at school computer laboratories and at the SCESD computer laboratory. During the site visit, several teachers interviewed discussed their training opportunities. The teachers felt all the training sessions they attended were extremely helpful and beneficial in integrating technology and the video conferencing stations into the classroom.

**Students Have More Opportunities and Experiences with Technology.** Due to increased access to the Internet, most districts focused on garnering financial support to place more computers in the schools. With more computers at schools and an increase in Internet access, students have more opportunities to work with technology. The TIIAP-funded portion of the SCESD initiative allowed some students to have opportunities that otherwise would not have been possible. For example, a group of eighth grade students participated in a video conference with Rigoberta Menchu, a Nobel Peace Prize winner. This experience would not have been possible without the video conferencing workstations. Other examples include high school and middle school students that can now create web pages for school and personal information, and other students that had the opportunity to video conference with MIR space astronauts. Additional opportunities for students included web publishing courses (WebWeavers) or after-school activities. These activities encouraged students to learn to use the latest in technology.

**The Job Performance of Some SCESD Staff Members and Several Teachers Were Affected as a Result of Utilizing the Technology.** SCESD staff who received training and used the audio and document-sharing stations benefited tremendously. Several SCESD personnel who were interviewed commented how beneficial the reduction in travel time was to increasing work productivity. Over the course of 14 months, approximately 100 meetings were held with the audio and document-sharing stations with anywhere from 8 to 45 people in attendance.

Several teachers who were interviewed also commented that the technology made available through this grant had an impact on their teaching. One way teaching can be affected is through changing the mechanism by which one communicates with other teachers, parents, and students. As reported in the final evaluation report submitted to TIIAP, 81 percent of responding teachers used e-mail to communicate. One teacher interviewed commented that the technology not only educated her in the use of telecommunication, but also demonstrated how important it is to provide students with empowering opportunities to learn about technology.

### Impact on Other Beneficiaries

Prior to 1994, the southern coastal region of Oregon did not have Internet access. With the creation of SCAN, residents were able to access the Internet. Although the creation of SCAN was not directly tied to the TIIAP-funded portion of the project, two servers, which increased SCAN capabilities, were purchased with TIIAP funding and allowed more schools and more community members to connect to the Internet. After the private portion of SCAN was sold, most of the region had access to the Internet, and now, eight other ISPs are servicing the region. The server also increased SCESD's capacity to improve communication with and for outside institutions. The SCESD server hosted a teleconference on Zero Emissions for EcoPlan International on their Bulletin Board. Participants were able to simultaneously send messages and view postings.

### Impact on Grant Recipient and Project Partners

**Reduced Cost and Saved Time for SCESD Staff.** By placing the audio and document-sharing stations at both SCESD offices, staff members were able to save time and money by not having to travel on a weekly basis. Conducting weekly management meetings with the audio and document-sharing stations allowed staff to save time and money normally accrued from the extended travel required to attend the meetings. Project staff estimated an annual saving of $57,312 on annual travel cost compared to the one-time setup cost for both locations of $29,200. It is understandably a great investment for SCESD. The cost and burden associated with traveling to the weekly meeting and to conduct collaborative learning projects was reduced for all SCESD personnel. Another outcome was that one of the board members, who was planning to resign because of an extensive commute for meetings, decided to continue serving because of the decrease in travel requirements.

**Increased Communication.** Another benefit for the grant recipient was the increased communication with legislators. Every Wednesday representatives from the SCESD and county boards met with legislative representative via the audio and document-sharing stations to discuss the potential impact of pending legislation on education, employers, chamber of commerce, child services, and other regional organizations.

**Replication**

To date, SCESD has not worked directly with other schools, districts, or education service district to adapt a similar approach.

**F.        Sustainability and Project Expansion**

At the time of the site visit, SCESD planned to continue each component of the project to varying degrees.

- The audio and document-sharing equipment at the SCESD offices will continue to be used in the same capacity. Training will continue on this equipment as other staff express an interest in utilizing the equipment for meetings.

- The VLN will be reviewed. Project staff felt the VLN had not reached potential, and they were looking to increase use among teachers and others accessing the site. Other plans include revising/simplifying several tutorials.

- Training will continue to be provided on the video conferencing unit. Project staff had plans to re-evaluate how each machine is being used in order to determine the best location for the machine.

- The servers purchased by the TIIAP grant allowed SCESD to maintain service to schools and other public institutions while selling the private side of SCAN. As part of the agreement, SCESD received free Internet service for 1.5 years for schools. The equipment continues to be stored at the SCESD office in Coos Bay.

Other project-related efforts include posting information from the project on the Internet and planning a conference to promote and discuss issues related to telecommunication in the schools.

As technology continues to explode, SCESD will search for new and better ways to integrate technology into the classrooms. The commitment from SCESD staff is to promote technology-related learning in order to prepare students for college and/or to join the workforce. They recognize how important technology has become to everyday life and want to make sure their students are ready for the challenge. Since the start of the TIIAP project, another source of income was SCAN. The revenue generated from the sale was channeled back in the overall technology plan for the area. SCESD and area school districts received numerous technology-related grants and donations to improve the status of telecommunications in their region. Each of

the projects listed below will provide additional technology-related services for students and teachers. These affiliated activities occurred both during and after the TIIAP grant period and have continued to change the way technology is utilized in the SCESD region.

- OPEN - Oregon's virtual learning network. This is a statewide learning network accessible on the web. It receives approximately 10,000 hits a day and has a full-time staff dedicated to its upkeep. The VLN that originated prior to OPEN has now become part of the statewide initiative to provide learning opportunities on the web.

- A large computer company is working with SCESD to provide up to six computers to teachers who present a lesson plan integrating technology into their classroom. The lesson plan must be reviewed and meet specified standards in order to qualify for the computers. Once approved each lesson plan is posted on VLN, which is connected to OPEN—increasing the overall collaboration.

- Under a new grant, video conferencing systems are being placed in all 21 regions throughout the state. One is being placed in a Coos County high school classroom with auditorium style seating. These will be used for teacher training and certification and to provide distance learning opportunities for local high school students. Through a separate grant obtained by SCESD, video conferencing units will also be placed in the Coos Bay ESD office. Currently, SCESD is working to obtain another grant that will establish video conferencing capabilities in the satellite office in Gold Beach, which can be shared with a local community college.

- The STRUT program exists at three local high schools. Students receive instruction on the mechanics of computer technology. This statewide program is preparing students to fix, build, and maintain computers and networks. The STRUT program at a local high school is currently planning to use the video conferencing equipment to prepare and provide tutorials on how to maintain and upgrade computers.

- Accessing Computers in Education (ACE) is an extensive statewide program that instructs teachers on integrating technology into the classroom in anticipation they will return to their districts and instruct other teachers. A local teacher held a 10-day course this year on integrating technology after attending the course last year at the state level. SCESD is working to receive another grant, which will allow the course to continue throughout the school year.

## G.     Lessons Learned and Recommendations for Other Communities

SCESD came away with numerous lessons and ideas as how to improve their overall approach. Organizations implementing an overall technology program need to consider the following:

**Establish Top-Priority Status from the Grant Recipient Organization.** SCESD indicated one reason for their level of success was because SCESD, as an organization, placed the technology initiative as a high priority. For other projects considering an overall technology plan, project staff felt it was critical to garner top-priority status from the entity in which the project exists. Along with political support from the institution, financial support needs to be a consideration to ensure the potential longevity of the project.

**Develop Written Agreements with Partners and Other Stakeholders.** Project staff indicated it was important for other projects that involved numerous partners to develop a clear set of guidelines. SCESD stressed the importance of having partners and other stakeholders that were committed to the project. Understanding the level of commitment from partners and possibly developing a formal contractual agreement with them would be beneficial. Also, when working with partners, project staff identified the importance of agreeing on a standard hardware, especially if they are to be networked. This made it easier for the technicians, trainers, and end users.

**Establish Technical Capacity and Secure Technical Support Staff.** Project staff emphasized the need for area networks to be established prior to implementing projects that would require the use of these networks. At the onset of the grant, SCESD was working to establish the wide area network (WAN) along with the LAN, which resulted in difficulties. A well-established WAN prior to project implementation would have enabled project staff to focus on the services being provided, and possibly, reduced technical difficulties encountered while trying to set up both networks. Another important aspect to consider is having a full-time staff member to oversee all technical aspects from troubleshooting to upgrading the software, which would allow equipment maintenance to take place at more regular intervals. If a regular schedule for system maintenance had been established early in the project, it would have been easier for project staff to ensure the equipment was functioning properly at all times. Project staff also found that on-site maintenance and setup of the video conferencing equipment was beneficial because the wiring and connections from each location varied.

**Providing the Equipment Is Simple; Engaging Teachers in Collaborative Learning Projects Is More Challenging.** SCESD staff emphasized how difficult it was to engage teachers in collaborative learning projects. Project staff anticipated that the increased ability to communicate via video conferencing without the travel would increase the likelihood that teachers would collaborate with other teachers. This type of collaboration rarely developed on the project. Project staff recognized that teachers not only need the mechanisms through which to communicate, but they require time and encouragement in which to engage in collaborative projects. This obstacle resulted in fewer collaborative efforts than originally envisioned by project staff.

**Teachers Need Time and Support to Learn and Incorporate the Technology.** SCESD staff stressed the importance of providing teachers with incentives and time to participate in training and other project activities. Most teachers have limited time to participate in training. They are over-loaded with student work, lesson planning, and after-school activities. Participating in training activities was difficult for many teachers to fit into their already busy schedules. Teachers interviewed indicated that when they are provided time and incentives to participate, they are more willing to engage in such activities. Teacher professional development is often overshadowed by the demands of teaching. One way that SCESD tried to combat this problem was through summer workshops.

One teacher interviewed during the site visit felt that 90 percent of the reason she was able to integrate the video conferencing and publishing workstation into the course was because she was a newly hired teacher and was working part time. This allowed her ample time to learn and integrate the technology into the curriculum. Another benefit was she had no written curriculum guides and, therefore, could create lessons that incorporated technology. Another important factor was the ongoing support from the school and from the project consultant/trainer.

**Content and Curriculum Should Support the Integration of the Technology.** SCESD emphasized how difficult it was for teachers to integrate one piece of highly advanced equipment (i.e., video conferencing units) into an already full curriculum. In order for technology to be completely integrated into the classroom, the content and curriculum should support the use of technology during regular classtime instruction. Students use computer labs regularly. However, once students had the opportunity to use the equipment as part of the regular class curriculum, it became an integral part of the knowledge and skills they acquired in school. In most SCESD schools, the curriculum was not in place to use workstations effectively, and with only one machine available for students, their access was severely limited. Project staff offered a

possible alternative that might reduce these difficulties: a current project underway at SCESD is attempting to promote computer integration by placing concentrated pods of 5-6 computers in each class so teachers can more easily integrate computer use into the daily classroom instruction.

**Understand the Equipment and Its Intended Purpose.** Video conferencing was difficult to operate and integrate. Project staff found it was not practical to use the multi-party component of the video conferencing equipment because it was difficult to have meaningful interaction with all participants. They discovered the point-to-point conferencing was more practical and easier to operate. Despite the advantages of the one-on-one video conferencing, it can also be problematic. Difficulties developed for end users and project staff when they attempted to establish a connection and maintain audio and video. In order to alleviate some of the difficulties with real-time communication via the video conferencing units, SCESD began to use communication capabilities that allow users to chat, send messages, and transfer files in real-time to others on-line. Due to the difficulties surrounding the use of video conferencing and of one computer in a classroom of 20-30 students, project staff commented they would not invest in the video conferencing workstations in the future.

H.	Summary and Conclusion

TIIAP funding supported one portion of SCESD's region-wide technology plan. The TIIAP portion of the SCESD technology plan focused on three aspects: (1) providing audio and document-sharing capabilities for SCESD staff in separate locations, (2) providing 20 video conferencing units to selected teachers, including significant training, and (3) developing a VLN in order to provide resources and learning opportunities via the web. Staff worked collaboratively with partners to fix any unanticipated problems (e.g., technological problems) and ultimately, these difficulties did not significantly affect project implementation or outcomes for end users.

Project success varied according to each aspect of the project. The audio and document-sharing equipment was certainly viewed as the most successful because it significantly reduced the amount to time spent by SCESD staff traveling between the main and satellite offices. The video conferencing units were less successful in terms of utilization. Several teachers took the time to learn the equipment effectively and were able to translate that learning into opportunities for students. Unfortunately, this was not the case for all teachers. Due to technological difficulties and the time consuming nature of learning to use the units, many teachers never maximized the potential capabilities of the units. The impact of the VLN was difficult to determine because it was difficult to measure the extent to which it was being utilized

by end users. Despite this difficulty, project staff recognize the unlimited potential of the VLN, and therefore continue to work on its expansion.

In general, the project was successfully implemented but the different technology approaches used by SCESD would need to be re-evaluated individually if replicated in other rural communities. SCESD indicated the most useful approach for any project encompassing such a large geographic area was the audio and document-sharing system. Also, SCESD found that integrating technology throughout such a rural and economically deprived area was challenging and required careful consideration and planning to be successful. The project director commented that the most critical aspect of effectively and efficiently managing resources was "you must be creative and leverage resources in such a way that projects complement each other." For SCESD, ensuring that projects complemented each other and did not take place in a vacuum increased the overall impact of the technology initiative.