

# 5) Infrastructure, Hardware, and Technology Resources



There is a big difference in how our students connect to the outside world today, compared to what was available before the project started. Today, all BorderLink schools have high speed connectivity, hardware, and videoconferencing, as well as access to LinkWorld, online modules, and mobile labs.

## High Speed Connectivity Infrastructure

The BorderLink Project took advantage of “dark fiber” in Imperial County (fiber optics wire that had been laid, but was not being used) and wireless technologies.

☞ **Fiber.** BorderLink has connected all Imperial County high schools to a countywide fiber-optic network. This state-of-the-industry high-performance network has been recognized statewide by the Corporation for Education Network Initiatives in California (CENIC) as a model implementation. The network was awarded a 2003 “Gigabit or Bust” award by CENIC and has been nationally recognized through a variety of publications and organizations.

☞ **Wireless and/or Microwave.** To expand the network to areas where it was not economically feasible to provide a fiber connection, we used carrier-class wireless.

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## Hardware

In partnership with several California initiatives to increase the number of computers in high schools, we have seen an exponential growth of computers in our schools. The following bullets describe our methods to target technology equipment to specific users to support BorderLink objectives.

☞ **Equipment for Online Courses.** We provided computers and printers to our BorderLink schools for the use of students who enrolled in online courses. We also offered laptop and desktop computers for students to check out to take home. We found that home access to online courses was very important. Many of our students did not own a home computer, so our project purchased and refurbished computers for student use.

☞ **Equipment for College Research.** We also furnished computers to school counseling centers to provide for student access to online college resources. Counselors and students used these computers to conduct Internet searches, access the LinkWorld college recruitment resources, apply for colleges online, and fill out Free Application for Federal Student Aid (FAFSA) forms.

☞ **Equipment for Educators.** We made the decision early in the project to provide equipment only to educators who were prepared to use it. That is to say, when we provided computers, printers, digital cameras, and other equipment to educators, the educators had participated in training first. We offered a special program to teachers who had gone through our institute-style professional development programs to place equipment for integration of technology into their classrooms. Teachers who completed the AP professional development course received computers and printers. We provided desktop videoconferencing equipment to administrators, counselors, and technical support staff who took our videoconferencing training sessions. The Innovative Projects (videoconferencing, LinkWorld, and online modules) all placed equipment into classrooms—according to what the teachers asked for to support their classroom technology programs.



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## Online Modules

### ☞ **Online Educational Technology Conference.**

The Online Educational Technology Conference provided the unique opportunity for educators from around the world to participate in a full technology conference - from their own computers! The conference included keynote speakers, break-out sessions, and a vendor area. We produced the conference using *Microsoft Producer*, a free add-on program for *PowerPoint 2000*. It links video with a *PowerPoint* slide show and places everything on the Internet. The sessions and workshops from this innovative conference have been placed into the Media Library and are available for everyone to use. The Imperial County Office of Education plans to repeat the conference every February. You are invited to attend!

☞ **Webcasting.** The San Diego County Office of Education has a webcasting system that links video with *PowerPoint* presentations. We have produced a number of our online workshops and mini-courses using this system, including the Get to Work workshops, Preparing for the CAHSEE, Preparing for SAT/ACT College Entrance Exams, and Get Ready,

Set, Go to College! The online workshops and mini-courses are available for your use. You can access them on the BorderLink website at [www.borderlink.org](http://www.borderlink.org) or the San Diego County Office of Education website at [www.sdcoe.net](http://www.sdcoe.net).

☞ **Media Library.** The Media Library is a rich source of online modules. Most of the break-out sessions from the Online Educational Technology Conference and sessions produced at the San Diego County Office of Education can be found in the Media Library. It can be accessed at [www.borderlink.org](http://www.borderlink.org).

## Videoconferencing

Some of the exciting videoconferencing activities included having high school students instruct elementary students in dance, linking young students with adults during the Read Across America campaign, including students from other schools in one of our Indian tribe's annual "Pow Wows," conducting professional development workshops with teachers 90 miles away, linking students in the California desert with a published writer, giving students the opportunity to hear

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first-hand accounts about the Holocaust from a survivor of the death camps, and offering AP Chemistry, Music Theory, Algebra, and other courses, with students from different schools participating in the same classes.

☞ **IP Videoconferencing.** The BorderLink Project has taken a leadership role in IP videoconferencing. The project is recognized throughout California as a leader in this technology. The project is often called upon to provide guidance and consultation, not only within California but also around the nation. The implementation of IP videoconferencing has been featured in many publications such as *Network World*.

☞ **Room Videoconferencing Units.** The project provided each high school with a Polycom Viewstation FX unit, along with two monitors on rolling carts. The units are mobile, so they can be moved to and used in any classroom on the campus. The FX units are typically used in large room or group settings.

☞ **Desktop Videoconferencing Units.** Desktop videoconferencing is an affordable yet powerful and easy-to-use tool that has



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allowed videoconferencing to propagate throughout the BorderLink Project. The project has chosen to standardize on the Polycom ViaVideo as its desktop solution.

- ☞ **Using Videoconferencing.** Videoconferencing has proven to be a powerful tool for the Borderlink Project. We have used room and desktop videoconferencing for a myriad of instructional and professional development activities. (IP videoconferencing can be used with both room and desktop units.) The technology has allowed us to change the model of taking people to the content and reversing it, by taking the content to the people.

## Mobile Learning Labs

- ☞ **What They Are.** Both the Imperial County Office of Education and the San Diego County Office of Education own and operate mobile technology vehicles, called learning labs. These remodeled recreational vehicles go out to schools to train teachers, provide students with technology activities, and allow people to review software. The Mobile Learning Lab in Imperial County was provided by the BorderLink Project and is exactly what its



name implies: an educational technology lab on wheels. Driven by an Learning Technologies Department employee, the Mobile Learning Lab takes technology to the students and to the community.

## LinkWorld

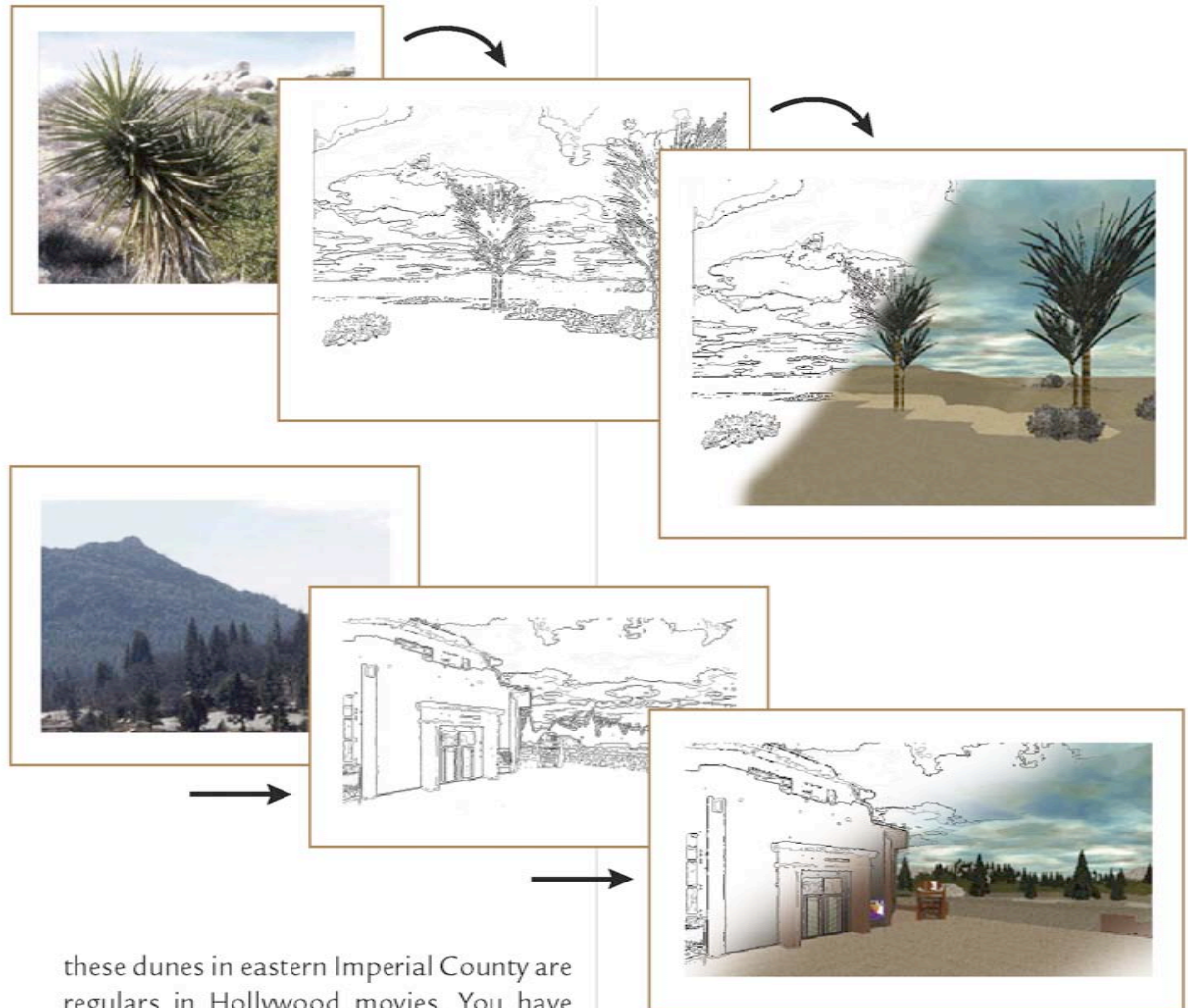
LinkWorld is a virtual environment, a three-dimensional website with chat function and web resources. It offers a method that requires no special equipment to make distance learning and long-distance collaboration a reality. More detailed information about how the BorderLink Project created and used LinkWorld is available at [www.borderlink.org](http://www.borderlink.org).

- ☞ **Why Did We Create LinkWorld?** As we have mentioned before, the geographical area covered by the BorderLink Project is very large. Imperial County by itself—not even counting the huge school districts in San Diego County—is larger than Rhode Island and Delaware combined. BorderLink country is also sparsely populated. The isolation, therefore, drove us to seek innovative solutions to bridge distances. We sought ways to connect students with experts and allow student/student and teacher/teacher collaboration at a distance.

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☞ **How Did We Create LinkWorld?** LinkWorld reflects the biomes of the real BorderLink territory. We took pictures of the areas. Then we collaborated with experts in virtual worlds to design and build the world. Our consultants were in Santa Cruz, California, and London, England. So we sat at our computers in San Diego and Imperial and Santa Cruz and London, and together invented LinkWorld. LinkWorld is one of nearly 100 educational worlds in the Active Worlds Educational Universe. To get more information about the Active Worlds Educational Universe, go to <http://www.activeworlds.com/edu/index.asp>. You can download and access LinkWorld by going to [www.borderlink.org](http://www.borderlink.org) and following the download instructions under “LinkWorld.”

☞ **What Does LinkWorld Look Like?** We designed the landscaping to look like the actual territory covered by the BorderLink Project. There are nine areas in LinkWorld, and each has its own special look. One area includes the agricultural fields and giant hay stacks around El Centro in Imperial County—and its signature “Mt. Signal,” the isolated mountain that rises out of the desert and inspired the BorderLink logo. We’ve mentioned the sand dunes before—



these dunes in eastern Imperial County are regulars in Hollywood movies. You have seen them in *Lawrence of Arabia* and the first *Star Wars*.

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☞ **What Is in LinkWorld?** Each of the areas has a theme - counseling services is one theme (how to do well academically, get ready for college, and prepare for careers). A second area is an original game that we created called CollegeQuest. The game invites young people to search complicated mazes for tokens. The tokens give advice on what to do to get ready for college in 6th through 12th grades. Seven other LinkWorld areas are devoted to academic subjects (math, English, history, etc.). Each of the nine areas has a building whose walls are covered in signs that link to web resources related to that area's theme. Scattered throughout the nine areas are specialized sections—a pavilion with information about genetic engineering, movie marquees with student-produced multimedia shows, a horse-drawn cart that serves as the stage for 16th century dramas, and on and on. We invite you to visit LinkWorld and explore.

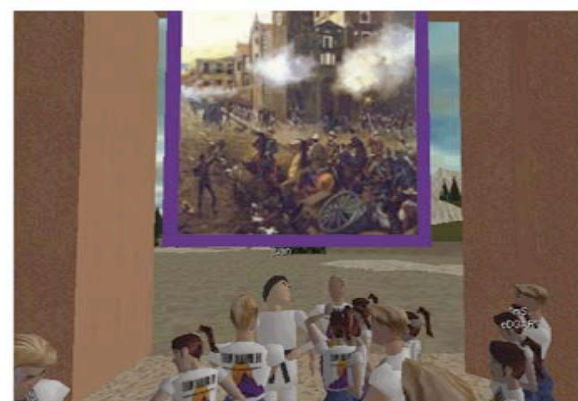
☞ **How Is LinkWorld Used?** LinkWorld holds a plethora of web resources of interest to students, teachers, and counselors. The virtual world organizes the materials for easy access. In addition, valuable information appears in various sections—for example, when an AP Physics class researched the

edge of science (black holes, an expanding universe, string theory, etc.), they posted their online modules inside LinkWorld. LinkWorld is a rich resource for instructional, college, and career information. In short, LinkWorld is a valuable source of information for secondary students.

☞ **What Activities Have We Held in LinkWorld?** In addition to being resource-rich, LinkWorld allows people to interact with each other in real time and from great distances. People appear in LinkWorld as “avatars”—computer-generated physical bodies. They communicate with each other—in real time—through chat function. This literally opens up the world to our students in isolated schools. For example, when a group of drama students from a tiny high school in the mountains decided to produce a play in LinkWorld, people attended their performances from as far away as Italy and Germany! We list some LinkWorld activities here:

- Art Show
- Commedia dell' Arte Drama Production
- Cutting Edge Physics
- Debate about the Ethics of Biotechnology
- First-Person Spanish Literature:  
Meet the Authors

- Meet Jorge Luis Borges
- History Simulation: Cinco de Mayo
- World History Review
- SAT Prep Online
- CollegeSearch
- College Recruiters
- Meet the Scientists
- Meet the Mathematicians





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