



The UC Berkeley
Interactive
University
Project

**Report of the Work of the
Interactive University Project
Fiscal Year 1999 - 2000**

Prepared for the Berkeley Pledge – July 2000

Report of the Interactive University Project Fiscal Year 1999-2000

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Introduction

This report documents the work of the Interactive University Project (IU) in Fiscal Year 1999-2000. The IU is a campus initiative, sponsored by IST, to develop a national model of how the University can best use the Internet to support K-12 education and community partnerships. As the IU is a large and complex initiative with a wide range of campus partners, Section I of the report (Background) provides an overview of the IU's goals, structure, partnerships, strategies, and evaluation methodology.

At the time of the writing of this report (July 2000), the IU is at the mid-point of its 2nd Phase of work (this three year phase runs from 1999 -2001). The accomplishments of the IU in FY 1999-2000 have been substantial and wide-ranging. They are the work of many campus, K-12, and community partners collaborating together, using technology and working hand-in-hand in classrooms and community organizations. Importantly, their work is building the foundation for even greater results as the IU's 2nd Phase unfolds through the coming year and a half. Section II, on Results, is the heart of this report. It describes the IU's accomplishments in 10 areas: 1) development and evolution of a broad-scale collaborative framework with school and community partners; 2) creation and publication of digital learning materials; 3) teacher professional development; 4) impact on K-12 students; 5) impact on school districts; 6) impact on communities and the digital divide; 7) impact on UC Berkeley; 8) new Information Technology Pathway program; 9) technology and tool development; and 10) dissemination of the IU model and media coverage.

Through its Internet Learning Community projects, community technology program, and technology support the IU funds and assists over twenty-five campus academic departments, research units, libraries, and service programs. A wide range of Berkeley faculty, students, and staff partner with 11 high schools, 17 middle schools and 2 elementary schools in San Francisco and Oakland. They work with 80 teachers and have impacted over 2400 students this year. Campus and school partners and participants are listed in section III, Partners, and section IV, Participants, of this report.

The IU prides itself on having developed a culture of reflective practice. If we are to build a national model that uses the Internet to connect the University and schools, this is essential. Changes in technology and challenges in K-12 education are many. This year has also seen many changes in key leaders the IU has worked with both on and off campus. The final section of the report, Changes, talks briefly about these issues and previews the new planning process the IU has instituted to plan for our next, 3rd, Phase of work. We see Berkeley as having an extraordinary opportunity to use the Internet at a very large scale to engage the people and content of the campus community with educators throughout the state.

I. Background

1. Overview: Goals, Objectives, and Structure of the Interactive University Project

Mission and Evolution

The Interactive University Project is a campus initiative whose mission is to develop a national model of how a public University can best use the Internet to support K-12 teachers, students, their families and local communities. The IU has focused in particular on disadvantaged Bay Area urban communities, creating strong partnerships with the San Francisco and Oakland Unified School Districts.

The IU, which started in 1996, is a new type of campus initiative: one that seeks to use technology to connect, at a very large scale, the people and content resources of the University with the K-12 system and with educationally focused community-based organizations. The IU's goals are ambitious, and the program is one of the first of its kind nationwide. The IU is currently in its second phase of work, which runs for three years from January 1999 to December 2001. This work evolved from the initial structured explorations and evaluation carried out in IU Phase 1, which lasted for approximately two years from 1996-1998 (see our website at <http://iu.berkeley.edu/iu> for extensive evaluation of this first phase).

The IU is committed to on-going and in-depth reflection and evaluation of our work. This is essential if we are to develop a national model, and it is essential given the scale of the challenges in K-12 education and the spectacular developments of the Internet. We are now finding that every year and half we must consider a potential reworking of our program model and our use of technology. Although we are only now halfway through our three-year 2nd Phase, we have begun this summer major planning for our next phase of work.

A program of programs centered around the Internet for University-school-community partnerships

The IU is a central campus program that supports and integrates the work of over twenty-five campus units. In this sense, it is a program of programs. As a department in the campus's Information Systems and Technology division, the IU brings together and funds activities of a wide range of campus academic and research units *who have a common interest in using the Internet to share their content and expertise with K-12 educators, learners, and the community.* During the three years of IU Phase 2 (1999-2001), the IU plans to provide over \$800,000 of grant funding to enable more than two dozen departments, institutes, libraries, museums, and research and academic units from all major disciplines on campus to participate in the IU (these partners are listed in section III of this report). Through these IU projects approximately 50 Berkeley faculty

and staff, and 100 students, are exploring how to use the Internet to work with 80 teachers and community members from 11 high schools, 17 middle schools, and 2 elementary schools in the Bay Area. The unifying principle of the IU's work in each of these projects is the role of the Internet in connecting the University with the K-12 system and the community.

Support of academic core of campus and IU leadership and organization

Since its inception in 1996, the IU has maintained a central focus on involving and funding the work of the core academic and research community of the campus—faculty, researchers, academic staff, and graduate and undergraduate students. The IU has been led by Executive Vice Chancellor and Provost Christ; her leadership has been essential to reinforcing IU's connection to the academic mission of the campus. The IU has developed strong partnerships with campus and systemwide outreach programs—the Berkeley Pledge being one key example. As part of Information Systems and Technology, the IU is able to partner with many campus units and to provide technology and programmatic leadership.

A leading and innovative program nationally

The UC Berkeley Interactive University Project is one of the earliest, most extensive, and most ambitious University efforts in the nation to employ the Internet to engage the people and content of a research University in partnership with the broader community. The on-going accomplishments of the IU's work are significant, and are enumerated in this report. But equally important, the IU is laying a foundation of knowledge, people, and practices for the campus to build upon as technology increasingly and dramatically becomes an integral part of the University of the future. The IU will be able to serve as a foundation for Berkeley to dramatically scale its engagement with the community using the Internet.

Funding and grants

In its first phase of work (1996-1998), the IU was fortunate to secure significant funding from a number of federal, campus, and corporate sources. This allowed the project to build strong and important relationships with key school partners in Oakland and San Francisco. Building upon this earlier success, the IU, in 1999-2000, received funding for its current and planned future work from ten sources, including federal, state, systemwide, campus, and private grants. This includes the IU's partnership with the Oakland and San Francisco Unified School Districts in grants from the U.S. Department of Education, the California Department of Education, and the National Science Foundation. IU total funding for FY 99-00 was approximately \$1 million, of which a little less than half was given to campus units that are part of IU Internet Learning Community Projects. Pledge funding of \$100,000 for FY 1999-2000 has been essential to the IU's programs and has been used principally to support campus units and evaluation.

Phase 2 - Focus on the challenge of scale

Integrating experiences and lessons learned in Phase 1, our Phase 2 overarching goal has been to *develop the foundation for a large scale, Internet-mediated learning community between the University, schools, and adjacent communities*. Our focus is to address the issue of scale, using the Internet to amplify and extend effective UC/K-12 relationships. The IU has set out to achieve the following five objectives:

- Enhance student achievement;
- Enable teachers to use technology to improve teaching and learning;
- Foster collaboration and a common educational culture at a very large scale between the campus, schools, and community;
- Promote the integration of teaching, research, and public service; and
- Identify effective, scaleable, and sustainable Internet outreach methods.

The IU has two types of objectives: shorter term objectives to positively impact teachers and students in key San Francisco and Oakland schools; longer term objectives to investigate and lay the foundation for a scaleable learning community that can ultimately serve a large number of teachers and learners and involve many campus units and faculty. Phase 2 is meant to inform and shape future work that will start towards the end of this current phase—that is, sometime in calendar year 2001.

An integrated system to realize our goals

To realize the IU's goals and objectives in Phase 2, the IU began to develop in 1999 an integrated system of activities. This system was to have five major project components integrated with school and community partners during the 1999-2000 year. Each component was designed to support and reinforce the others and to serve as the foundation of people, activities, content and investigation for the large scale learning community. These components are:

- I. Internet Learning Community Projects;
- II. After-school Community Technology Center to link in-school and after-school work using the Internet;
- III. Evaluation and research that enhance and refine the model;
- IV. Collaborative technology leadership to train teachers and campus partners to work together using new technologies; and
- V. Web technologies and tools to provide places for on-line discussion and publication, libraries of digital learning materials, and a channel for news about the best uses of technology to improve teaching and education.

Internet Learning Community Projects: The IU is sponsoring 11 Internet Learning Community Projects in the 1999-2001 time frame. These projects are the core of IU work and the primary path of intervention. Teams of UC faculty

and students, and K-12 teachers and curriculum specialists, are developing exemplary digital learning materials for use in the K-12 community. These materials will: be driven by local, national and California content, performance and technology standards; focus on core curriculum; employ effective digital pedagogy; include tools for customization by teachers; scale to be used by many schools; incorporate assessment methods; and foster an on-going set of UCB/K-12 relationships.

Evaluation, Research and Dissemination: We continue to carry out and refine the IU project's evaluation at the macro-level of overall work, of student achievement through curriculum embedded assessment, and of teacher reflection on new teaching practices. Micro-level assessment of outcomes within projects is also ongoing. Our evaluation work is linked to the research community at the campus who are exploring questions about the use of the Internet in teaching, community collaboration, and systemic educational improvement.

After-School Community Computing Centers: We are investigating how the University can help to create and support safe places, at schools and in community based organizations, where both students and family members can come during non-school hours to learn, explore and interact using technology. A key focal point in this work is addressing the digital divide with our community partners.

Educational Technology Collaborative Leaders: We are in the early phases of exploring a leadership training program to support the development of technologically wise mid-level leaders from the schools, University, and community. These leaders would know how to use a variety of Web technologies and how to work within their institutions. They could serve as a nucleus of trained and experienced personnel around which a larger Internet mediated University-school-community partnership can be built, expanded, and sustained.

Web-based Collaborative Tools: We continue our research into how information technologies and Internet collaborative tools will best help create communities for UC/K-12 collaboration. We are hoping to provide access for students, teachers, families, administrators and researchers to the following: Web-based places to find and work with others; a library of digital learning materials and distributed learning objects; exemplary projects and teaching practices; and a channel for news about the best uses of technology to improve teaching practices and education. In June 2000, the IU will complete its work developing informational web site capacity for the UC Office of the President *UC Nexus* Project.

We are now in the process of evaluating these components and adjusting them for the future based on lessons learned in the last year and a half. We are also adding a new component based on a National Science Foundation grant with the

San Francisco Unified School District: an Information Technology Career Pathway. The IU will work with SF high schools to train teachers and support students in a career pathway from high school through college to technology related careers.

Through these components the IU has designed its partnership agreement, intervention strategy, and evaluation methodology with our key district partners in Oakland and San Francisco. These are described next.

2. Partnership Agreements with District Partners

The IU has close and strong partnership agreements with the San Francisco and Oakland Unified School Districts. We are partners at the district level in major grant initiatives to use technology to improve teaching and learning. This includes, with Oakland, two California Department of Education Technology Literacy Challenge Grants and a recent U.S. Department of Education Technology Innovation Challenge Grant. With San Francisco we are partners in a California Department of Education Technology Literacy Challenge Grant and a recent National Science Foundation Urban System Project. In each case we have structured our work with the district through a jointly developed IU Internet Learning Community Project Structure. This is the heart of our intervention strategy and is described in the next section.

3. Intervention Strategy and Expected Outcomes

The eleven Internet Learning Community (ILC) projects are the core and primary focus of the IU, and, as such, are the vehicles that enable us to carry out most components of our intervention strategy. (The list of projects and their campus and school partners is found in Section III.)

The Internet Learning Community Projects were chosen through a competitive campus process in fall of 1998. The RFP was issued by Executive Vice Chancellor Carol Christ in partnership with SFUSD Associate Superintendent for Curriculum Maria Santos and OUSD Associate Superintendent for Instruction Yolanda Peeks. The projects are funded for a three year cycle ending December 2001.

Each project is led by a campus department and made up of the following team members:

- UC departmental project coordinator and participants
- Teacher leaders from 2 or more schools (average number is 6-8)
- Site technology specialist for 1 or more schools (if available)

- District curriculum and/or literacy specialist
- District instructional technology liaison / District IU liaison
- IU program manager and/or technology consultant (to attend all or some meetings)

Each team develops standards-driven, web-based digital learning materials from high-quality Berkeley digital content and/or various interactions with Berkeley faculty, staff, and students. The development of, and experimentation with, these digital learning materials is the core organizing activity of each project. Each project can pursue different strategies in doing this, and we encourage projects—based on their disciplinary area, teacher team, and digital content—to explore a range of methods of using the Web and learning technologies to develop scaleable, digital learning materials.

The essential idea behind the ILC Projects is: build a strong team of UC and K-12 partners; have them develop web-based digital learning materials together that are driven by school standards and make use of the best materials and people from Berkeley; explore how technology can be integrated in the classroom; focus on potential teacher leaders and district specialists as key mediating agents and to support professional development; use and evaluate these Web-materials and activities in teachers' classrooms to effect student achievement; and select the best web-materials for dissemination throughout the district. By developing Web curriculum the hope is that we are building activities that are scaleable and flexible. By developing this in a partnership between UCB and local districts we are finding ways to use the Internet to structure on-going relationships between the University and the schools. By training teacher leaders and working with curriculum specialists we are developing a cadre of K-12 partners who can and will train other teachers on how to use Berkeley based digital curriculum and resources. The intent was to build a structure that had the potential to scale from the start.

We have laid out for the ILC Projects the following five areas of expected outcomes. These are ambitious and difficult goals, and each project is working to accomplish them by December 2001. (The following section is derived from the award conditions given to each project).

1. Student achievement and assessment

Enhancing student achievement is at the heart of the ILC projects. UCB, district and school team members work collaboratively in specifying student outcomes and developing the appropriate student assessment approach. Although assessing student outcomes can be challenging, the IU and district staff provide consultation and support in identifying appropriate student assessment methods.

This year a comprehensive Project Coordinator Manual for assessing student achievement was produced by a student in the Graduate School of Education who worked for the IU.

In this area projects work to:

- Improve student outcomes in relation to relevant curricular content/performance standards, language arts standards, and technology literacy standards.
- Develop/use appropriate student assessment methods (e.g., portfolio, exhibition, performance, use of rubrics, etc.).

2. Teacher professional development in the use of the Internet to improve teaching and learning

Teacher professional development is a key component of building successful Internet learning community projects. Core project teams have been created, and include an initial cadre of Teacher Leaders to facilitate professional development and project planning. Teacher Leaders are playing a key role in developing and testing curriculum materials, planning and implementing student assessment, and will disseminate project results to an extended teacher team in the later phase of each project. Sharing results between Teacher Leaders and an extended group of teachers is a key element of project scalability. Overall, teacher professional development activities seek to:

- Develop innovative pedagogy through collaborative planning and reflection.
- Improve content knowledge.
- Enhance technology knowledge.
- Integrate content, technology, and innovative pedagogy where possible.

3. Digital learning materials and identification of effective teaching and learning strategies using the Internet

Digital learning materials are based on relevant curricular standards (content/performance, language arts, and technology literacy). The scope of development can range from full curriculum, to lesson plans, to activities that utilize unique digital images, text, scientific simulations, etc. Ideally, the materials being developed will be flexible enough to adapt to individual teaching, accommodate teacher creativity, and be used by a large number of teachers.

Digital learning materials will be based on, and serve to identify and embody, effective teaching and learning strategies using the Internet. The ILC projects work to understand how technology can be effectively integrated into the curriculum; teaching strategies are the bridge for this integration. Defining and documenting effective strategies is an important element of the IU activities.

We provide an IU template for the development of digital learning materials. This template, developed by K-12 teachers, will be revised based on input from projects. The current template can be found at:

<http://iu.berkeley.edu/iu/internal/digiguide/template/index.html>

For this outcome area, ILC projects are:

- Developing exemplary digital curricular materials.
- Investigating, defining, and documenting how the Internet can be used to enhance and extend key district and other teaching strategies.

4. Collaborative learning relationships facilitated by the Internet

A central focus of ILC projects is to build a large-scale learning community involving UCB and K-12 participants that is facilitated by Internet technology. Technology-facilitated relationships should be complemented with face-to-face interactions to successfully achieve project objectives. Internet learning community projects promote the development of collaborative networks and use innovative strategies to address the *scale* of these networks. These networks may involve:

- K-12 teachers and students.
- UC faculty, staff and/or students.
- District staff.
- Community and family partners.

5. School Environment / Families / Leadership

Projects are strongly encouraged to take a leadership role in sharing project progress and outcomes with school personnel, families and local communities. Communications with participating school sites are particularly important. Each ILC project is encouraged to:

- Ensure that participating teachers work and share with other teachers, department chairs, etc. in school.
- With district/IU assistance, secure principal's understanding and support.
- Develop some basic outreach to families; add information into digital learning curriculum for families.
- As appropriate, develop after-school activities using digital learning materials and environments.

4. **Assessment and Evaluation Methodology**

The overall evaluation of the IU's work is coordinated in partnership with the Graduate School of Education. The evaluation builds upon and refines the strategies we developed for IU Phase 1 through our grant from the Department of Commerce's Telecommunications Information Infrastructure Assistance Project (TIAP).

The IU Project uses a two-tiered evaluation plan; the plan is designed to:

- Examine how Internet-based technology can be best utilized within K-12 schools and classrooms to improve teaching and learning, increasing integration of technology into the curriculum; and
- Identify important components of 'collaboration-building' among university and K-12 partners within the context of technology implementation.

A two-tiered evaluation plan was developed to accommodate the several types of work within the framework of the IU Project. It consists of *micro* and *macro* levels of focus and data collection. The *micro-level* pertains to individual ILC projects; the *macro-level* pertains to the IU as a whole.

Micro-level evaluation focuses on key issues of student achievement and the specific consequences of using technology-based methods of outreach. Macro-level evaluation addresses project-wide issues of collaboration involving University and community partners using the Internet, project sustainability, and project scale.

Strategies were developed to gather data using a combination of human interactions and technology-mediated interactions. The following data collection methods are being used:

- pre/post questionnaires via the Web and paper formats
- focus groups
- individual and group interviews (audiotaped and videotaped)

Appropriate combinations of the above methods were selected to assess the broad issues of:

- Building and Sustaining a Collaboration
 - Collaborative Framework
 - Role of the Internet
 - Pre-requisites of an Effective Collaboration
- Impact of the Internet on:
 - Student Achievement
 - Teacher Practices
- Integrating research, teaching, and service
- Technology issues
- Issues related to project sustainability and scale

Macro-level pre-tests have been administered for teachers and project coordinators. Micro-level assessment is being carried out by a number of projects now and will increase as the projects move into the second half of their work.

Detailed results for all of this work will be compiled at the end of the three-year cycle of IU Phase 2. Consequently, detailed student results will be available in the final report for Phase 2.

II. Results and Accomplishments in 1999-2000

In July 1999, the IU was six months into its three year second phase. We report here on results and accomplishments from the fiscal year 1999-2000, which corresponds to the early middle phase of work in the eleven IU Internet Learning Community Projects, the Community Technology Projects, and other activities the IU supports and coordinates.

1. COLLABORATIVE FRAMEWORK

In Phase 2 the Interactive University has built upon and extended the established framework for inter-campus and university/K-12 collaboration, coordinating the work of eleven IU Internet Learning Community projects. New collaborative work in FY 99/00 includes: an After School Community Technology program; the Information Technology Pathways Institute in the San Francisco Unified School District; new IU web sites for internal project coordination and dissemination to the public; and the presentation of special events such as the Oakland Community Information Infrastructure's "Oakland Connects" Conference in February 2000. IU Phase 2 brings together more than 25 campus departments and units, 11 high schools, 17 middle schools and 2 elementary schools in San Francisco and Oakland and has reached over 2400 students; in addition, new community partnerships have emerged with corporate, municipal government, and community-based groups in Oakland. The table below displays the total number of university and school district participants involved in the IU.

Table

UC Berkeley			K-12	
Faculty and Professional Researchers	Staff	Graduate and Undergraduate Students	Teachers	Students
14	30	75 (approx)	80	2415

Inter-campus Collaboration: In FY 99-00, the Interactive University Project refined and built upon its structure to facilitate communication and collaboration of UC Berkeley's technology-focused outreach projects. IU Project activities provided for continued communication and sharing on outreach technology issues among campus groups. Key elements of the inter-campus collaborative framework included:

- Development and implementation of web-based tool for discussion, collaboration, and posting of news items and articles for use by all project participants;
- Facilitation and guidance of emerging collaborations among campus groups;

- Monthly pilot project coordinator meetings for Internet Learning Community projects;
- IU Faculty Advisory Committee.

Campus/K-12 Collaboration: The human and programmatic infrastructure of strong campus/K-12 relationships that was established in the first phase of the IU work continues to support projects and activities, and has evolved to meet challenges as they arise. Collaborative work was a key to designing and implementing the Internet Learning Community projects and other activities, and continues to help define technology infrastructure and professional development strategies in the schools. Key elements of the university-community collaborative framework include:

- District/University IU Project Liaisons: In partnership with the Berkeley Pledge, two full time teachers on special assignment serve as project liaisons. (The Pledge has instituted the liaison model that the IU developed in its first phase of work.) The liaisons have access to their district's information and procedures, and serve as conduits of communication between IU campus personnel and district personnel at multiple levels.
- Strategic Planning Group: A team composed of key UC campus and K-12 district personnel (including the Project Liaisons) met regularly to discuss long-range project strategy, and to reflect on challenges, lessons learned, and best practices. The Group continued its key role in planning at all levels; it facilitated development of the schools/campus partnerships to develop leadership teams and implement ILC project plans. In addition, the Group served as a sounding board for evaluation that allowed adjustments to the IU project based on feedback from participants and reflection on best practices.
- Meetings with District Leaders: Meetings every other month among IU managers, Associate Superintendents for Curriculum and Instruction, and District Technology Coordinators facilitated joint decision making.
- Strong Leadership: The IU project benefited from strong leadership at all levels: Executive Vice Chancellor/Associate Superintendent; pilot project coordinator/school Principal; campus personnel/teachers and other school personnel.
- Project Coordinator Student Evaluation Manual: Under the guidance of a faculty advisor, graduate students in the Graduate School of Education produced a comprehensive document to better support and assist IU projects in assessing student achievement; it presents a step by step procedure defining student achievement and assessment techniques.

- Frameworks and templates: Project frameworks and report templates were developed for twice yearly progress reports and other record keeping and data tracking needs.
- Team Structure: Each of the ILC projects is coordinated and administered by a team of specialists in the project's subject area: a UCB project coordinator, K-12 teacher-leaders, curriculum development specialist(s). The team works to keep the project on track to achieve success in the IU's targeted outcome areas: developing digital curriculum materials, integrating technology into classroom teaching, providing opportunities for teacher training and development, and gathering data to be analyzed in the IU project and student assessment components.

This collaborative framework, with the key elements listed above, makes possible all facets of the IU's K-12 projects. In addition, the strong collaborative relationship with the district has resulted in the IU being a partner with the district on five successful major grants:

- Two California Department of Education Technology Literacy Grants with Oakland
- California Department of Education Technology Literacy Grant with San Francisco
- U.S. Department of Education Technology Innovation Challenge Grant with Oakland
- National Science Foundation Urban Systemic Project with San Francisco

From these multi-year grants, the campus, through the IU, will receive over \$1,600,000 of funds through the next four years.

2. DIGITAL LEARNING MATERIALS

A primary goal for each of the Internet Learning Community Projects is to create effective digital learning materials based on relevant curricular standards, and meeting agreed on technology standards. The types of materials developed can range from full curriculum modules, to individual lesson plans, to various activities that integrate digital images, text, scientific simulations, virtual field trips, and more, into teaching and learning. Developed materials highlight and make available UCB resources and knowledge; they structure and facilitate the K-12 educational community's relationship with the University, providing a vehicle for outreach, as well as intervention in classrooms and communities. Our materials are intended to be flexible enough to adapt to individual teachers and allow for teacher creativity—increasing the likelihood that they will be used by a large number of teachers. A large amount of teacher professional development, training, and small group work is focused in the ILCs around producing digital materials (see section below: Impact on Teacher Professional Development). An

on-line guide and templates for assistance in producing digital materials is located at: <http://iu.berkeley.edu/iu/internal/digiguide>.

Below is a list of digital learning materials published to date by IU projects. Projects are at different stages in the cycle of development, and the list will grow as we move past the mid-point of the three-year cycle of Phase 2.

(NOTE: for a complete list of ILC Projects, please see Section III. IU Phase 2 Partners)

- Archaeological Research Facility Project:
After school project developed a series of CD-Rom learning activities.
- Bay Area Writing Project:
<http://www.blackboard.com/courses/IU101>
- California Heritage Project:
<http://basrc.wested.org/basrc/bandl/Institute99/projects.html> (index to site)
- Connecting Students to the World:
<http://globetrotter.berkeley.edu/people/Townes/townes-con0.html>
<http://globetrotter.berkeley.edu/people/Dellums/dellums-con0.html>
<http://globetrotter.berkeley.edu/people/Tusman/tusman-con0.html>
<http://globetrotter.berkeley.edu/people/Scheper-Hughes/sh-con0.html>
<http://globetrotter.berkeley.edu/people/Jowitt/jowitt-con0.html>
<http://globetrotter.berkeley.edu/people/Lifton/lifton-con0.html>
<http://globetrotter.berkeley.edu/people/Jacobs/jacobs-con0.html>
<http://globetrotter.berkeley.edu/people/Tarnoff/tarnoff-con0.html>
<http://globetrotter.berkeley.edu/people/Karekezi/karekezi-con.e0.html>
<http://globetrotter.berkeley.edu/people/Searle/searle-con0.html>
<http://globetrotter.berkeley.edu/people/Crews/crews-con0.html>
<http://globetrotter.berkeley.edu/PubEd/research/china.html>
- Integrating Science Teaching and Technology:
<http://www.ucmp.berkeley.edu/IU/template/lp.html> (8 lessons at site)
<http://128.32.124.167/ISTATPage/MiddleSchool/index.html>
<http://128.32.124.167/ISTATPage/HighSchool/Highschool.html>
<http://cse.ssl.berkeley.edu/> (gateway site interactive units and lessons)
<http://www.seismo.berkeley.edu/seismo.istat/9th> (gateway site to lessons)
- Project FIRST:
<http://cse.ssl.berkeley.edu/literacy/trainingmaterials.html>
- Center for Latin American Studies:
<http://courses.berkeley.edu:8000/courses/clas1>
- City Bugs:
<http://www.CNR.Berkeley.EDU/citybugs/>
- Environmental Science and Technology:
<http://www.kernsite.com/uwp/waterqua.htm>

3. TEACHER PROFESSIONAL DEVELOPMENT

The 2nd Phase of the IU project involves 80 core teachers in Oakland and San Francisco from grades K-12, working in partnership with UCB personnel. Teachers continue to have a number of roles in the Internet Learning Community Projects: co-developing and classroom testing of digital materials and curriculum, conducting on-site project coordination, providing professional development to their colleagues, exploring how to use technology in the classroom, and implementing IU activities in their classrooms.

In addition, a core component of 80 teacher-leaders, plus dozens of additional interested teachers, in the SFUSD and OUSD have participated in professional development Institutes, Summer Programs and other teacher training activities conducted with the IU.

Professional Development: K-12 teachers in ILC projects participate in a wide variety of on-going professional development sessions focused on subject content and technology. Project-wide Internet technology training sessions (e-mail, video conferencing, Web browsing, Web authoring, chat tools, etc.) have been sponsored by the IU.

Most ILC projects run professional development sessions throughout the school year, and more ambitious teacher institutes during the summer and other school breaks. In the past year some of the topics have been: strategies for student use of primary sources; orientation for teachers to UCB resources; lab sessions for hands-on work with technology tools; session on biography writing with digital cameras; training for mentor teachers; working in small group to revise existing digital materials and/or begin developing new materials; a workshop for 17 9th grade Earth Science teachers (<http://www.ucmp.berkeley.edu/IU/1117workshop.html>); discussion of elements of successful UC/school district collaboration; difficulties of working with technology in the classroom.

In summer 1999, nine ILC Projects ran substantial professional development or Summer Institute programs. Among the most ambitious, ISTAT ran the "Summer Step-Up" in San Francisco, with 8 participating SFUSD teachers. In addition to reaching over 1200 incoming 9th grade students, "Summer Step-Up" was a chance to field test previously developed digital modules and receive feedback from a number of classroom situations. New earth- and space-sciences materials were tested for possible inclusion in the regular school year. Among other events, the Archaeological Research Facility Project conducted a week-long teacher training session. The Bay Area Writing Project worked with 5th and 7th grade social studies teachers in OUSD's "Core Values" program; the week-long teacher institutes in July and August demonstrated how to integrate technology into curriculum. The California Heritage Project conducted a one-week institute that gave 12 teachers hands-on experience using inquiry-based tools to access and search primary resources. The Institute of International

Studies' Connecting Students to the World project presented two all-day Saturday seminars demonstrating how teachers can use the Institute of International Studies' archive of on-line "chat sessions" in the classroom. Environmental Science at Galileo hosted teachers on campus for an orientation to UCB and the resources available here. ORIAS conducted a week-long institute in which teacher participants worked on how to incorporate IU technology models into the classroom. Three projects that were classified as "planning" projects last summer all consulted with teacher-leaders to solicit their input about the developing project plans.

For summer 2000, ten of the ILC Projects have already held, or plan to hold, professional development sessions and institutes. ISTAT again plans to provide digital learning materials and support for the SFUSD "Summer Step-Up." In July ISTAT will support Project INQUIRES, a professional development program for SFUSD sixth-ninth grade science teachers. The SFUSD IU Project Liaison will conduct a professional development workshop to introduce science teachers to the web-based Earth science materials developed by ISTAT in the past year. ORIAS will work with a small team of teachers to finish a project that has been developing a content module on epic literature. Environmental Science at Galileo will meet with its teachers for a week in August to complete preparations for the coming school year. The Bay Area Writing Project will host a three-week invitational institute at OUSD's *la Escuelita* technology lab in June and July; the focus is on expository writing and technology. The CityBugs project will host a teacher requested workshop to teach teachers about entomology so they can better teach their students; teachers will then design a lesson plan related to entomology. The Center for Latin American Studies holds a Summer Institute in June that features development and implementation of digital learning materials for the coming school year. Connecting Students to the World will conduct a Summer Institute for teachers in August, and make a presentation to Oakland's Urban Dreams Project in July.

In addition, as part of their matching effort in support of the IU project, the San Francisco and Oakland Districts offer technology training workshops and institutes for IU teacher participants throughout the school year. Teachers attend the workshops to learn the use of several tools and applications.

Integration of Technology into the Curriculum: In ILC Progress Reports, almost all projects report that teacher-leaders and team members have met regularly to work on one or more of the following: elements of pedagogy, classroom management of technology tools, planning an in-class module, curriculum development, creating strong useful lesson plans, assessment and performance components of lesson plans. While all eleven ILC projects continue to develop curriculum materials, eight have already published material on the web for use in the classroom (see Digital Learning Materials above). These materials, both the completed and the developing, are integrating university and Internet resources into the K-12 curriculum.

The Value of the Internet for Teaching and Learning: Building on the outcomes measured at the end of IU's first phase, participation in the IU project continues its positive impact on teachers' perceptions of the Internet's value for teaching and learning. ILC Progress Reports have indicated teachers in a number of projects are excited about the ways Internet technologies enable them to present more content information to students. Projects also report teacher participation in other related technology training programs, as well as teacher-leaders taking the lead in teaching other teachers about educational technologies—both informally and in organized courses. Most projects report significant use of e-mail as a useful tool for communication among project participants. Other Internet and technology tools being used by projects include: Listserv, Web authoring tools, WebCT, Course Info, BlackBoard.com, Manila, and digital video.

Teacher Networks: The IU enables and supports networks among teachers. The newly implemented IU News, with its associated discussion features, has provided a new 'virtual' space where teachers (and UC faculty and staff) may converse and share experience and information. IU efforts continue to enhance and strengthen the collegial systems that began forming between different teachers in the first phase of IU work. Changes in teachers' perceptions of the university and the types of university resources useful in the classroom, first noted in the initial phase of IU work, have continued. ILC project progress reports have noted that teachers feel respected as full members of the UC/K-12 collaboration teams leading the ILC projects. These outcomes continue to be beneficial and productive for the teachers and their curriculum development and technology integration efforts.

4. IMPACT ON K-12 STUDENTS

The final impact on students from the IU Internet Learning Community Projects will be fully gathered, recorded and analyzed at the completion of the current project cycle—December 2001. As noted in the Assessment Methodology section above, data collection at both the micro and macro levels is built into IU work and is ongoing. Based on this ongoing data collection, and the observations and reflections of the project teams and teacher-leaders, we can report here on some important outcomes we have tracked or noted in the past 12 months.

Internet as a Key Motivator to Engage materials and Projects: Teachers, curriculum specialists, and Berkeley undergraduate mentors in IU projects consistently report that student motivation is significantly increased by classroom and other project work that incorporates use of the Internet. This is consistent with results documented in IU Phase 1. What has been striking, as well, is the anecdotal evidence that those students who don't speak up in class and/or participate actively, often find a new or more comfortable avenue for participation through the use of various Internet technologies.

Summer Step-Up Program: in June and July 1999, approximately 1200 students participated at four high schools in San Francisco where ISTAT, the campus partnership for Integrating Science, Teaching and Technology, ran a “Summer Step-Up Program” designed to prepare incoming 9th grade students for high school. UCB ISTAT members worked with eight San Francisco teachers to deliver hands-on and on-line materials to the classroom. The program helped students to gain knowledge about topics ranging from earthquakes to sunspots to fossils to the properties of light, while being exposed to web-based and other computer based technologies and curriculum modules. Preliminary assessment showed positive impact on student content knowledge. The program will be repeated again this summer. The program is described at <http://www.ucmp.berkeley.edu/IU/stepup.html>.

Establishment of After-School Technology Program: In the fall of 1999, the IU launched Expedition!, an after school program that partners the IU with the UCB Archaeological Research Facility, the Oakland Unified School District and Oakland’s Roosevelt Village Center community collaborative to address the youth development goals of all partners. To date, 55 sixth graders have participated in Expedition!. They have had hands-on experience with archaeology materials, and have learned basic computer skills, such as mouse, interface and file manipulation. Thirty unique after school activities were designed and put into practice. Over the course of eighteen weeks of the program, the 10-13 year-olds have also worked on their reading and writing skills, learned about working cooperatively in groups and how to teach others. Although detailed data about this work is still being gathered and analyzed, initial assessment of student portfolios and work shows an increase in content knowledge and language arts skills improvement.

Exposure to Digital Curriculum Components: At the midway point of the three-year project cycle, nine of the ILC projects, in more than a dozen schools, have used Berkeley digital materials, or taught lessons from newly developed digital curriculum. A number of projects are beginning to disseminate high quality Web-based lesson plans and activities to a growing body of teachers. The number of students being impacted by the work of the IU is growing. The two remaining projects did not become fully supported ‘core’ projects until November 1999. Both of them report progress on digital curriculum development and expect to use developing materials soon in their teachers’ classrooms.

Integrating Student Assessment into Digital Learning Materials: Each of the ILC projects is designing its web-based learning materials to meet the standards of the IU’s student assessment component. A number of projects have built Web-based assessment guides and tools into their materials—a significant and important achievement that will enable teachers and campus partners to gather data and build more authentic assessments. The eleven ILC’s report differing levels of progress toward development and testing of digital learning materials,

and gathering of data to assess student achievement at the “micro” level. ILC Project digital learning materials include embedded prompts or questions to measure a student’s understanding. In most projects, classroom teachers and instructors are making observations about the success and efficacy of the developed material, and compiling these observations for use in assessment and improvement of the material. Assessment results will be disseminated at the end of the project cycle.

Knowledge of Colleges and Universities, and Attitudes Toward Internet

Technologies: Increasing knowledge about college admissions and planning through the use of digital learning materials is one of objectives we hope projects will realize as well. In the eleven ILC projects, students are participating in an on-line pre-intervention evaluation survey carried out at the “macro” level. This survey focuses on Internet technology use, attitudes toward technology, knowledge of colleges and universities, and attitudes toward higher education. The impact of participation in IU projects and programs, and changes in students’ knowledge and attitudes in the areas evaluated, will be fully assessed when data from the pre-intervention results is compared with post-intervention data and analyzed at the end of the project cycle.

5. IMPACT ON THE SCHOOL DISTRICTS

Continuing work with the IU has fostered collaboration between the Oakland and San Francisco Unified School Districts in a number of ways, among them sharing of lessons learned, and shared experience investigating differing methods of project implementation. We believe that the wider perspective gained from collaboration, and the inclusion of the UCB's Interactive University Project as an important partner in the technology projects Oakland and San Francisco have undertaken, improves the chances of success when seeking external funding.

Both districts have received substantial Technology Literacy Challenge Grants from the California Department of Education—Oakland for the “Foundations Project” and the “Core Values Project” and San Francisco for its “LINKS Project.” In addition, Oakland has received a U.S. Department of Education Technology Innovation Challenge Grant—for the “Urban Dreams Project”—and San Francisco has received a National Science Foundation Urban Systemic Program grant for systemic reform of its schools. The IU has been a partner with the districts from the initial proposal submissions. Accordingly, the IU plays a major role supporting, and coordinating with, the school districts as they carry out the work funded by these five major grants.

The impact of the IU project on the school districts continues to be seen in several areas. The partnership between the university and the two school districts continues to be very strong, and continues its impact in these districts by

allowing a systematic infusion of research-based content and technology into schools across all grade levels. The multi-disciplinary and campus-wide nature of the Interactive University has made it easier for curriculum leaders at the districts to build school and teacher participation across all grade levels.

6. IMPACT ON COMMUNITIES

Creation of New After-School Community Technology Center: In 1999 the IU began a new program to explore how we might assist in creating a number of after-school community technology programs. The Expedition! After-school program partners the Interactive University Project with the Archaeological Research Facility, the Oakland Unified School District, and Oakland's Roosevelt Village Center community collaborative to address the youth development goals of all partners.

The Roosevelt Village Center (at Roosevelt Middle School), staffed by the East Bay Asian Youth Center, is the site and administrative home for Expedition! Oakland's village centers are collaborative ventures of community organizations and schools to implement coordinated, comprehensive programs and services for youth at school sites after school and on weekends. A key strategy is to use middle schools as community hubs for addressing several issues:

- there are not enough positive activities for children and youth in disadvantaged urban neighborhoods;
- the hours and places surrounding school are critical to child safety;
- young people need more contact with caring adults;
- to create a secure environment and significant new opportunities for children and youth, it is critical to create neighborhood-level supports and institutions.

As noted, Expedition! has reached 55 sixth grade students at Roosevelt and helped extend technology training and classroom learning to the after school program and to families in the community. It also provided the campus with significant information to assess the benefits and costs of investing in this new program area.

Oakland Community Information Infrastructure (OCII) and the Digital Divide: The Interactive University Project continued its leadership role in the OCII collaborative by staffing and supporting ongoing steering group meetings. The steering group, meeting every week, consists of individuals representing organizations or institutions with an ongoing commitment to addressing digital divide issues and to working in partnership. In addition, the City of Oakland would like us to serve as a technology 'think tank,' and a forum and clearinghouse for ideas, grant proposals, and initiatives that should be decided by a collective of the Oakland IT community.

The major undertaking of the IU and the OCII during this year was the planning and implementation of "Oakland Connects," Oakland's first major conference on the digital divide. Four hundred people attended "Oakland Connects," including 60 students from Lowell Middle School. The audience was a balanced mix from key targeted sectors: education, city government, industry, community groups, higher education, and foundations. Speakers included OUSD's new superintendent Dennis Chaconas; Congresswoman Barbara Lee; Cisco Higher Education Vice President Kevin Warner; SmartForce CEO Greg Priest; Mayor Jerry Brown; City Manager Robert Bobb; Vice Chancellor Genaro Padilla; and Assistant Secretary for Policy & Development of HUD, Susan Wachter. The audience included State Assemblywoman Audie Bock and County School Superintendent Sheila Jordan. Seventeen Oakland technology organizations prepared exhibits about their organizations or projects and staffed the Community Technology Showcase area.

"Oakland Connects" made major strides in bringing the community and those on the "other side" of the digital divide together with local and regional leaders from city, university, schools, and corporate sectors. A significant outcome of this event was that individuals and communities who do not often interact with one another engaged in a dialog centered on the technology needs of Oakland's disenfranchised.

There was general acknowledgement and recognition of the role of the University, the Institute of Urban & Regional Development and the Interactive University Project, in convening the various sectors and doing most of the work to make the conference a success. *We are very pleased to report that the Interactive University Project and UC Berkeley have received a U.S. Housing and Urban Development Department "Best Practices Award" for organizing the conference.*

7. IMPACT ON UC BERKELEY

The IU Project continues its central role on the Berkeley campus as the coordinating unit for the use and evaluation of Internet technology in educational outreach. Campus departmental collaborations around outreach and K-12 education continue—both new ones and those initiated in Phase 1 of our project—among several groups that had not worked together in the past.

A Vehicle for Participation in Outreach: The IU continues to be a vehicle for the participation of faculty, staff, and students at all levels of educational outreach in partnership with the K-12 community. Participating graduate student researchers have continued and expanded their work in evaluation, student assessment, program coordination, and adapting research results for broader

audiences. A Graduate School of Education student member of the IU evaluation team developed a handbook for Project Coordinators explaining how to implement a project that includes a student assessment component.

A number of the IU's ILC Projects continue to facilitate tutorial relationships between UCB undergraduates and K-12 students. These experiences have awakened an interest in teaching in many of the undergraduates. Campus staff and faculty gain greater understanding of pre-college educational issues, and forge lasting relationships with personnel at the schools. Campus participants increase their knowledge of K-12 curricula and their understanding of curriculum constraints, as well as students' levels of knowledge and experience.

An excellent example of this is the new after school technology program, Expedition!, started at Roosevelt Middle School in Oakland. Using the UC Links after school model, Expedition! involves UC Berkeley faculty, staff, and students directly with sixth graders through a service learning course, *Anthropology 134B, Taking Multimedia Archaeology to the Sixth Grade*. The course and program have provided UC Berkeley undergraduates with: an opportunity to work directly with 6th graders and contribute to neighborhood development; exposure to some anthropological, archaeological, pedagogical, and social theory; experience in alternative educational/pedagogical approaches; experience in the development of teaching tools; an opportunity to develop and hone skills in participant observation, the creation of field notes, and the development of research questions to be answered with field data; an opportunity to build teaching and communication skills, particularly within a strongly multicultural environment; an opportunity to positively impact the life of children at a crucial developmental stage by providing them with college-age role models and mentors.

Collaboration Among Campus Groups: The leadership provided by the IU continues to support collaboration among various technology-oriented campus outreach efforts when they apply for extramural funding, making the UCB campus more competitive in a climate that values partnerships to leverage a variety of existing resources.

Faculty and students from the Graduate School of Education continue to work with academic departments and outreach units, to understand and facilitate project evaluation.

Integration of Research, Teaching, and Service: The IU is evolving its role as a vehicle for carrying out the University's missions of research, teaching, and service. Berkeley today is challenged to find ways to integrate information technologies into these core missions so it may transform the ways it makes knowledge available to all its constituents. The IU believes it has a leading role in the discussion of how to appropriately and effectively employ new technologies to fulfill the University of California's missions. In October 1999, Karl Pister, UCOP Vice-President for Educational Outreach, said in a speech

written with research and assistance help from IU Director David Greenbaum, “it is not unreasonable to expect that public institutions of higher education must play a key role in ensuring that social advance is coupled with technological advance in the 21st century.” IU work is raising the awareness of the beneficial role technology should play in the University’s future, and in a diverse social and economic community—of which the University is a part—that sustains opportunities for all citizens.

8. INFORMATION TECHNOLOGY PATHWAY INSTITUTE

During the past year, the IU has helped to lead the development and initial implementation a new Information Technology Pathway (ITP) program, a major component of SFUSD’s Urban Systemic Program. ITP supports students wishing to develop specific expertise in technology career areas such as programming, networking, web design, and multimedia.

The first year of the IT Pathway's implementation begins in the 9th grade, and provides students with a comprehensive IT Preparation Course—the foundation for supporting student learning in all content areas, and exposing students to IT career clusters.

In Summer 2000, ITP Institutes are preparing IT teachers to implement and teach the 9th grade IT Preparation Course. IU Team members are leading sessions at the Institutes, guiding the teachers in learning how to search and evaluate on the web and build web sites for classroom use.

The June institute covered Internet and Web Technical Competencies and Programming Technical Competencies. The August institute will cover Database Technical Competencies and Network Technologies Technical Competencies.

9. TECHNOLOGY AND TOOL DEVELOPMENT ACCOMPLISHMENTS

IU staff technology specialists have spent considerable time working to assess and test emergent technology products for learning and collaboration, and applying or developing tools for specific IU needs and situations. This is a critical component of the IU core-staff work. We have built and sustained partnerships with a number of IST and campus units that focus on learning technologies to learn from other efforts and share our research.

In the past year the IU has focused on three primary areas: first, the IU has completed work with UCOP on the UC Nexus web site project; second, we have investigated appropriate tools and products, and developed IU prototype and IU web services and sites; finally, in partnership with ILC project teams, we advised and worked to help develop digital learning materials in a variety of formats.

Below is a bulleted list of 1999-2000 accomplishments and activities in these three areas:

UC Nexus - Systemwide:

- Completed HTML web site on topics related to teacher education
<http://www.ucop.edu/teachered/>
- Completed SQL server database web site for collecting information about service and academic degree programs that are related to public school education and the support of California's young people. (No permanent URL yet.)
- Finishing HTML web site on topics related to UC/K-12 outreach in general. (No permanent URL yet.)

Interactive University Project- Campus Tools:

- Investigated a number of Internet-based tools for use in various aspects of IU projects and digital curriculum development and publication, including: Web authoring tools, WebCT, Course Info, BlackBoard.com, and Manila.
- Investigated content management software; chose UserLand's Manila for IU web site development. Using Manila, created the following new web sites
 - Main IU public web site
<http://interactiveu.berkeley.edu:8000/IU/>
 - IU Community News
<http://interactiveu.berkeley.edu:8000/IUnews/>
 - IU Staff (password protected)
<http://interactiveu.berkeley.edu:8000/IUstaff/>
 - IU Project Coordinators
<http://interactiveu.berkeley.edu:8000/Projects/>
- Investigated ways of sharing resources by using XML, RSS, SOAP, etc. Built prototype of IU portal using these technologies:
http://nexus-44-1.berkeley.edu:8001/my_iu.pl
- Began working with iMATRIX consortium to adapt "SURWEB" image collection/manipulation software to IU needs
<http://www.surweb.org>
- Presented preliminary findings on the above topics to IU project participants.

Internet Learning Community Projects- Digital Learning Materials:

- An extensive list of archived digital learning materials, created and published by ILC projects in the past year, is presented above (in number 2 of this section—Results and Accomplishments in 1999-2000). Working with guidance and assistance from the IU technology staff, a major effort of each project has been to develop and create digital learning materials. Many teacher development sessions, held by most of the projects, and numerous ad-hoc and on-line discussions, have focused on the strategies, tools, technology resources and other issues that must be mastered and utilized to make a successful module, lesson plan, or other digital component for classroom use. IU staff developed and made available a guide to developing digital curriculum:
<http://iu.berkeley.edu/iu/internal/digiguide/template/index.html>

10. DISSEMINATION OF MODEL, MEDIA PRESENCE

The IU takes seriously its role of sharing the campus's work in the use of technology for public service. We have worked closely with Public Affairs, the Chancellor's Office, International and Area Studies, and the Office of the President to present the work of the IU to a wide range of audiences. In addition, the IU has instituted a series of media campaigns, again with key assistance from Public Affairs, to share its efforts. We hope to expand our communication efforts significantly in the coming fiscal year. Below are key examples of our accomplishments in this area:

- Presentations to the President of the Dominican Republic and other Distinguished International Visitors: In September 1999, the IU was asked by the President of the Dominican Republic and members of his Cabinet to give a presentation and explanation of the IU's distance learning projects. The IU was the only group on the Berkeley campus who participated in this unique visit. In March, 2000, a delegation from Peking University, in the Peoples' Republic of China, was on campus and attended a presentation by IU Team members. And in May 2000, the IU presented to the Minister of Education and the Ambassador from Luxembourg.
- Presentation to California Legislators in Sacramento: In June of 2000, IU Director Greenbaum joined Chancellor Berdahl and other Berkeley faculty members in Sacramento to talk to legislators, legislative staff, Regents, Berkeley alumni, and student interns about the role of technology enhanced learning and service at the Berkeley campus.
- Presentation to U.C. Regents: In June 1999, IU Director Greenbaum and members of the IU Team were invited by the UC Regents to deliver a

presentation about the work of Interactive University Project in its partnership with UC Nexus.

- OCII “Oakland Connects” Digital Divide Conference: The IU was the central organizer for the February 2000 Oakland Community Information Infrastructure Digital Divide Conference that brought Oakland’s education, corporate, municipal government, and community–based sectors together to develop strategies and action plans to bridge the digital divide in the city of Oakland. Over 400 individuals attended. The IU Director spoke, along with the VC Genaro Padilla, the Mayor, and City Manager of Oakland. As noted earlier, the IU recently received a HUD regional best practices award for its part in helping plan the conference.
- Presentation to the Chancellor’s Cabinet: In November 1999, IU Director Greenbaum and core IU staff gave a progress report and demonstration to Chancellor Berdahl’s Cabinet.
- National and Local Media Coverage: During the past year news articles that quoted IU staff and/or described the IU have appeared in *The New York Times*, *The Atlanta Constitution Journal*, and *The San Jose Mercury News*. (See the IU site, <http://iu.berkeley.edu/iu>, for these articles.)
- IU Director David Greenbaum was interviewed by ABC news in April 2000, in conjunction with a visit by President Clinton to East Palo Alto to speak about “Digital Divide” issues.
- National Reports and Evaluation of IU work: In October 1999, the National Telecommunications & Information Administration (NTIA, an agency of the U.S. Department of Commerce) released its Collected Case Study Evaluations, which contained a detailed profile of the IU conducted by Westat, an independent research and consulting firm. http://www.ntia.doc.gov/otiahome/top/research/EvaluationReport/case_studies.htm. In April of 2000, NTIA released its Evaluation Report: Technology Opportunities Program. This report, also written by Westat, includes an additional assessment of the IU project and the effects it is having.
- Berkeleyan Articles: Beginning in April of 2000, with an introductory piece by Executive Vice Chancellor and Provost Carol Christ, the Berkeleyan began a series of articles that, over the next year, will profile each of the Phase 2 Internet Learning Community Projects. <http://www.urel.berkeley.edu/berkeleyan/2000/0405/iu.html>
- IU Community News: A newly developed, web-based site, open to the public and designed to serve the greater IU community of K-12 educators, UC faculty, project participants, UC staff, and other interested parties. IU News

delivers IU, education, and technology news the first and third Tuesdays of each month.

<http://interactiveu.berkeley.edu:8000/IUnews/>

- IU Public Web site: In the spring of 2000 the main IU web site was redesigned and expanded to include more information about IU projects and participants.

<http://interactiveu.Berkeley.EDU:8000/IU/>

III. IU Phase 2 Partners

Internet Learning Community Projects: the eleven projects are described below, each accompanied by the name of the Principal Investigator and a list of campus and school partners:

1. Archaeological Research Facility Project

The Archaeological Research Facility project is using multimedia and Internet technologies, as well as hands-on, experiential activities, to teach archaeology to middle school students in Oakland. UC Berkeley graduate and undergraduate students work directly with teachers and students in classes and after-school programs to enhance students understanding of archaeology as a practice and to encourage the development of critical thinking skills.

Principal Investigator: Professor Ruth Tringham, Department of Anthropology. **UCB Partners:** Department of Anthropology, Archaeological Research Facility. **Schools:** Oakland Middle Schools.

2. Bay Area Writing Project: Teaching Writing and Technology Project

The Bay Area Writing Project, in collaboration with the Graduate School of Education, uses expository writing in social studies and language arts curriculum to improve students' historical thinking and writing skills in Oakland middle schools.

Principal Investigator: Carol Tateishi, Director, Bay Area Writing Project. **UCB Partners:** Bay Area Writing Project, Graduate School of Education. **Oakland Middle Schools:** Bret Harte, Carter, Claremont, Elmhurst, Havenscourt, King Estates, Lowell, Madison, Montera, Simmons, Cole, Swett.

3. California Heritage Project

The California Heritage Project explores how the Bancroft Library's California Heritage Collection, an online archive of over 28,000 images of California history, and other related primary source materials, can best be used to support local, California and U.S. History curriculum standards in San Francisco and Oakland schools.

Principal Investigator: Gerald Lowell, University Librarian. **UCB Partners:** The Bancroft Library, the Teaching Library, the American Cultures Center. **SF Schools:** Franklin MS, Hoover MS, International Studies Academy HS, Lincoln HS. **Oakland Schools:** Roosevelt MS, Montera MS, Lowell MS.

4. Connecting Students to the World

The Institute of International Studies (IIS) uses online conversations and digital curriculum to link Berkeley faculty and distinguished visitors to San Francisco high schools and Oakland middle schools. IIS is developing these resources to enhance U.S. History and Civics curriculum.

Principal Investigator: Harry Kreisler, Executive Director, Institute of International Studies. **UCB Partners:** Institute of International Studies, Human Rights Center. **Schools:** San Francisco and Oakland High Schools.

5. Office of Resources for International and Area Studies: History through Literature

The History through Literature project works with Oakland teachers to develop web-based learning materials that will support 6th and 7th grade curriculum units on World History. This project integrates literature and resources from International and Area Studies and other partners, to help students understand the histories of the Near East, China, India, Africa, Japan, Western Europe and the spread of Islam.

Principal Investigator: Steven Poulos, Vice-Chair, International Area Studies. **UCB Partners:** Departments of Near Eastern Studies, South and Southeast Asia Studies, East Asian Languages, Classics. **Schools:** Bay Area Middle Schools: Brewer, Carter, Claremont, Elmhurst, Frick, Havenscourt, King Estates, Roosevelt, Westlake.

6. Integrating Science, Teaching, and Technology

The Berkeley Seismological Laboratory, the Center for Particle Astrophysics, the Center for Science Education at the Space Sciences Laboratory and the UC Museum of Paleontology have developed a partnership for Integrating Science, Teaching, and Technology (ISTAT). The ISTAT team works with 6-12 grade teachers in San Francisco to create a suite of inquiry-based digital science curriculum materials.

Principal Investigator: Professor David Lindberg, Director, UC Museum of Paleontology. **UCB Partners:** UC Museum of Paleontology, Space Sciences Laboratory, Berkeley Seismological Laboratory, Center for Particle Astrophysics. **San Francisco Schools:** Galileo HS, Mission HS, Thurgood Marshall HS, Horace Mann MS.

7. Project First: Foundations in Reading through Science and Technology

The Center for Science Education at the Space Sciences Laboratory leads a partnership with rich expertise in the areas of literacy, science, technology and curriculum development in Project FIRST. The goal of Project FIRST is to increase the literacy development and proficiency of Oakland elementary school students through a model program that integrates inquiry-based science curricula, Internet technology and a mentored learning environment.

Principal Investigator: Dr. Isabel Hawkins, Senior Fellow, Center for Science Education. **UCB Partners:** Space Sciences Laboratory. **Schools:** Oakland and Berkeley Elementary Schools.

8. Center for Latin American Studies: Exploring Latin America

Exploring Latin America investigates contemporary and historical aspects of Latin America and its relationship to teachers and students in the Oakland and San Francisco Unified School District, and the Center for Latin American Studies. The project is developing a Latin American Web Site that builds on and enhances existing curriculum resources. The Center for Latin American Studies is working with teachers to discuss the best approach for setting up conversations with visiting experts on Latin America, UCB faculty and graduate students, and with students in Latin America.

Principal Investigator: Professor Harley Shaiken and Maria Massolo, Center for Latin American Studies. **UCB Partners:** Graduate School of Education, Graduate School of Journalism, Departments of Geography, Sociology and Ethnic Studies. **Schools:** Oakland and San Francisco Schools.

9. College of Natural Resources: CityBugs Project

The Environmental Leadership Program of the College of Natural Resources is working to understand how to best use a unique Internet-based tool to support science curriculum standards across grade levels in the Oakland and San Francisco Unified School Districts. This tool will enable students to use insects to explore their local ecology, gain an appreciation for bio-diversity, learn scientific classification, and integrate science education with technology literacy skills.

Principal Investigator: Donald Dahlsten, Associate Dean, College of Natural Resources. **UCB Partners:** Environmental Leadership Program, College of Natural Resources, Division of Insect Biology, Essig Museum of Entomology. **Schools:** Oakland Middle Schools.

10. Environmental Science at Galileo Academy of Science & Technology

The Environmental Sciences Program and the Department of Ethnic Studies works with the Galileo Academy of Science and Technology of the San Francisco Unified School District to plan how to develop and implement digital learning materials for an online course in Environmental Science for 11th and 12th grade students. These learning materials will integrate the resources and expertise of the Urban Watershed Project at the Presidio of San Francisco. The project is exploring how to involve Environmental Science and Ethnic Studies students as mentor/tutors through a UCB Service Learning Class.

Co-Principal Investigators: Professor William Berry, Environmental Science; Professor L. Ling-chi Wang, Chair, Ethnic Studies. **UCB Partners:** Environmental Science, Ethnic Studies, Lawrence Hall of Science, the Urban Watershed Project. **Schools:** Galileo High School and other San Francisco High Schools.

11. Institute of East Asian Studies: Cultural Exploration

The Institute of East Asian Studies is building a prototype of an interactive electronic tool that will help San Francisco schools use the resources of the Electronic Cultural Atlas Initiative (ECAI) to support Social Science standards in World History, Culture and Geography. With this prototype, students will use archeological digs, tomb excavation, underwater salvage, and other techniques to explore the artifacts of a "virtual island" with a history, culture and economy similar to that of Japan or Korea.

Principal Investigator: Professor Lewis Lancaster, Acting Chair, Center for Korean Studies. **UCB Partners:** Center for Korean Studies, Institute for East Asian Studies. **Schools:** San Francisco High Schools.

Community Technology Projects: The Interactive University's Community Technology Projects are described below.

Expedition! After-School Community Technology Learning Center: In the fall of 1999, the Interactive University launched Expedition! At Roosevelt Middle School in Oakland. Based on the UC Links model, this after-school program creates and supports a safe place where students and family members can come during non-school hours to learn, explore and interact using educational technologies.

Oakland Community Information Infrastructure (OCII): This coalition, formed in 1998, continues to pool its resources and expertise to define goals for an Oakland Community Information Infrastructure. OCII partners collaborate on community technology projects for low-income families and

youth. In February 2000 the OCII hosted "Oakland Connects," a conference that brought Oakland's education, corporate, municipal government, and community-based sectors together to develop strategies and action plans to bridge the digital divide in Oakland.

IV. IU Phase 2 Participants

This table presents FY 1999-2000 teacher and student participants by school district and school for the eleven Internet Learning Community Projects

IU Internet Learning Community Projects FY1999-2000 Teacher & Student Participants by School District and School

Schools Teachers/Students

OUSD

Bret Harte MS	Leilani Carbonell	
	Jessica Ahart	
	Kent Fitzsimmons	
	Elizabeth Lonnecker	
	Raul Nunez-Ramos	
Brewer MS	Eunice Wright	
Carter MS	Caleb Cheung	
	Raphael Morris	
Claremont MS	Michelle Small	
	Askia Egashira	
Elmhurst MS	Clyde Byrd	
	Toni McElroy	
Frick MS	Rich Kinst	
	Judy McGinty	
	Andrea Gershwin	
	Jerome Gourdine	
Havenscourt MS	Roma Graves	120
	Daniel Toy	
	Andy Shin	
	Jean Rustig	
John Swett MS	Claire Stoermer	100
	Dan Fleming	
King Estates MS	Stacy Carpenter	
Lowell MS	Bill Spafford	50
	Jill Mazrui	
	Jeff Resnick	
Montera MS	Joyce Black Carson	50
Roosevelt MS	Fabiana Ahumada	180
	Keith Brown	
	Damond Moodie	
	Xiao Wei Shi	
	Tina Tworek	
Simmons MS	Julie Winters	
	Christina Medina	

Schools Teachers/Students

SFUSD

Cesar Chavez Elem	Genevieve Schmidt-Camacho	
Redding Elem	Bridget Slevin	
Ben Franklin MS	Holly Clark	50
	Colleen Wheeler	
Gloria Davis MS	Pat Spencer	
Hoover MS	Terry Lai	50
	Peggy Manion	
	Nathan Steller	
Horace Mann MS	Judy Drummond	
	Debbie Farkas	100
	Dinorah Salazar	100
Balboa HS	Pablo Rodriguez	
Galileo HS	Richard McDowell	110
	David Barrios	
Ida B. Wells HS	Thai Nguyen-Khoa	25
	Denzel McCollum	
Int't Studies Academy	Linda Guitron	50
	Koby Pakar	
Leadership HS	Ninine Clements	
Lincoln HS	Gail Dent	50
	Kathy Gallardo	
Lowell	Gale Ow	25
	Thais daRosa	
Marshall HS	Kevin Hartzog	100
Mission HS	Jennifer Fong	
	Eric Lewis	
O'Connell HS	Richard Bruni	25
Washington HS	Teresa Camajani	
	Barbara Brewer	30

ISTAT/SFUSD Summer Step-Up	17 ISTAT Teachers + 1200 Summer Students
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TOTALS
30 Schools
80 Teachers
2,415 Students

V. Changes

1. New IU Plan in Development

Before reporting briefly on some important changes and challenges, we note that the IU has begun a major new planning effort for our next phase of work. This new planning document will report extensively on change, program models, lessons learned, conditions of the models' success and more.

As noted in Section I, given the IU's broad goals and the changing technology and organizational environment the IU functions in, major planning reviews are essential and highly valuable. The IU core team is proud that we have built a culture of reflective practice within the organization and with many of our campus partners. The IU team has developed a framework (regular meetings, review of literature and new tools, products and companies, and exposure to the "latest" in the field) for making reflective adjustments to our day-to-day work and our longer range goals. We have tried to learn from the best of market-place practices, emerging Internet companies, and business planning, as we work to meet our goal of creating a sustainable and scaleable model that uses the Internet to improve education for all learners at a systemic level, and also maintains the right mixture of human interaction and technology.

The IU has chosen to begin its next major step by creating a "business plan." This will be based on an innovative "social venture" business planning process from the Haas School of Business. We feel this model will add a new level of rigor, scope, and clarity to our future plans. A unique element of this plan will be an analysis of the "social return on investment" of the Interactive University Project's work. This will complement the more traditional analysis of educational, service, and research outcomes. We believe we will be one of the first UC departments concerned with service and research to develop such an analysis for our programs and the campus's investment in our work. Our new plan is in the early phases of research and development. It will be available for review and discussion in the fall semester. It is our aim to share this plan as widely as possible with key campus leaders and school and community partners so that we can gather input, further develop the plan, and collaborate with campus units.

2. Challenges, Changes, Barriers, and New Opportunities

The past year has been one of accelerating change, in both the Internet and information technology sectors, and in the organizational structures and personnel of our campus and school district partners.

New Technologies: The scope and pace of change, innovation, and hype in the Internet and dot.com arenas has been phenomenal in the last year. "E-learning," learning management systems, portals, distributed Web content

management tools, and XML have been several of the important technology domains the IU has been exploring. The IU continues to analyze and use of some of these tools, making use of the best products or ideas and incorporating them into our evolving model for an Internet community of learners supported by UC Berkeley faculty, students, staff, and, above all, knowledge. We will have to (and want to) devote even more time in the coming year to work in a number of these areas.

One small example---this winter the IU began to use an interesting (and inexpensive) new Web tool for group discussion, journal sharing, and collaboration—Manila. It has been used to re-create our public web site; to develop the new IU News site for dissemination of news and events to projects and IU participants; and on both the News site and a new IU Staff site, it has enabled discussions and posting of images, sharable documents and timely notes.

UCB Campus and SFUSD and OUSD personnel changes:

On the Berkeley campus, Executive Vice Chancellor and Provost Carol Christ—the project's Principal Investigator—has stepped down, and Professor Paul Gray is beginning a new job as the EVC&P. In the Office of the President, Karl Pister—a key IU partner, and UCOP Vice President for Educational Outreach—has left, and Professor Alex Saragoza has assumed the role. We look forward to forging good relationships with Professors Gray and Saragoza.

In addition, a possible re-organization of the Berkeley Pledge is underway and of outreach as a whole, with the consolidation of a number of key outreach efforts in Undergraduate Affairs. The creation of the new Center for faculty participation in K-12 partnerships is also important to our work. IU and IST look forward as well to building stronger and new partnerships with Undergraduate Affairs and the developing Center for faculty involvement in K-12 outreach. We hope in both cases to be able to lend technology and other support to essential campus K-12 partnership efforts.

Both of our primary school district partners—San Francisco and Oakland—have hired new superintendents in the last several months. The districts are undergoing administrative transition and a time of change:

- both of them are looking at possible changes in their leadership structure; this may impact district staff and leaders the IU has worked closely with;
- both have key instructional technology staff we have built relationships with who may be leaving or who are being asked to do multiple jobs;
- both continue to embark on major district wide initiatives with, in some cases, insufficient staff and;

- finding teacher leaders to invest in still remains a substantial challenge, and will remain one given the continued difficulties of teacher retention in the Oakland and San Francisco Unified School Districts.

Challenge of Scale

A challenge for the campus, and a central focus of the IU, is the question of scale. For the IU this translates as follows: how can we use technology to make available the content and people of the extraordinary Berkeley campus community, and how can we support large numbers of K-12 teachers and learners in need of high-quality Web-based programs. It is around the issue of building a highly-scaleable model that the new IU planning efforts center. We believe Berkeley has a profoundly important opportunity now and in the next several years to use the Internet to extend its learning community to a vast audience of schools and teachers, and do this in a way that will benefit the educational and civic experience at the campus.

VI. Budget

1. Carry-Over

The IU is not carrying any funds over from FY 1999-2000. All funds have been allocated to IU Internet Learning Community Projects and evaluation efforts.

2. FY 2000-2001 Budget Request

For FY 2000-2001 we are requesting the same allocation that we received for the previous fiscal year: \$100,000. These funds will be allocated principally to (1) key Internet Learning Community Projects in San Francisco and Oakland and (2) to a limited amount of graduate student staff for on-going evaluation and assessment. These funds are critical to the completion of the IU's work in Phase 2 (1999-2001), and this request is consistent with discussions and strategic commitments made to the IU. We also note that we have limited this request to the amount of our previous year's allocation based on instructions from the Pledge to all Pledge funded projects.

3. Leverage of Pledge Funds

The IU has been highly successful in leveraging the campus's investment through Pledge funds in the IU. As noted earlier in the report, the IU is a partner in five on-going and new grants with the Oakland and San Francisco Unified School District. Listed below are the grants and the amounts IU is received from these grants in fiscal year 1999-2000. There are two key things to note about these grants. First, a substantial amount of the funds received is allocated to campus units participating in IU projects. Second, that in some cases the funds the IU receives from the Pledge are used as campus matching funds in these grants.

1999-2000 Grants to IU through Partnerships with District:

- California Department of Education Technology Literacy Grant with Oakland Unified School District ("Core Values"): \$150,000
- California Department of Education Technology Literacy Grant with Oakland Unified School District ("Foundations"): \$35,000
- U.S. Department of Education Technology Innovation Challenge Grant with the Oakland Unified School District ("Urban Dreams"): \$120,000
- California Department of Education Technology Literacy Grant with the San Francisco Unified School District ("LINKS"): \$75,000

- National Science Foundation Urban Systemic Project with the San Francisco Unified School District: \$170,000.

Total funding from these grants to the IU for FY 99-00: \$570,000.

In addition, this year we raised \$125,000 from private donations for a new teacher technology leadership program. This program is just being established and will compliment key school partnership efforts.

4. Media Coverage

Please see Section II.10 of this report for a list and links to the media coverage of the program. Almost all articles referenced from national, local, and campus media are available on the IU's web site.