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## HISTORY AND PHILOSOPHY OF A COLLABORATIVE LEARNING LABORATORY: ECELL 1997-2001

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In the spring of 1997 a group of Department of Education and University of Hawai'i faculty met to brainstorm ways to help teachers learn to use computer technology and telecommunications in the classroom. We were a diverse group—a principal, the director of the Hawaii Educational Research Network (HERN), members of the University of Hawai'i Information Technology Services Department and faculty from the Master of Education in Teaching Program.

Our plan was to build on the success of the HERN summer workshops in ways that would emphasize instructional applications. The HERN workshops had been extremely valuable in developing teachers understanding but the group felt that a different approach was needed to ensure that teachers knew how to apply the strategies in their own classrooms. In addition, we felt strongly that student teachers should be a part of this work as they represented the next generation of teachers—those who offered most promise in using these transforming technologies. A solution was quickly proposed: a summer school that would embody the principles of collaboration, reflection, and inquiry. Thus, the Electronic Collaborative Educational Learning Laboratory (ECELL) was born.

The group were committed to making a success of this project and quickly set out to design and define ECELL 1 for the summer of 1997. It involved a frenzy of activity: three months of intensive planning and organizing that ranged from clarifying our philosophy to planning the details of financing the program. Each of the partners brought a particular expertise to the process—a critical factor in the initial success of the program. The Department of Education supported the effort by providing its summer session sites. HERN and the Master of Education in Teaching (MET) program at the College of Education provided stipends for pre-service teachers. UH College of Education faculty arranged credits for professional development coursework.

Much of the funding for teacher salaries and operational costs were covered by student tuitions. However, with only a few weeks before the session, registration for the intermediate program was much lower than we anticipated, with less than 20 students enrolled. We had planned to enroll at least 150 students at Dole Intermediate and another 150 at Ma'ema'e Elementary. Fortunately, an onsite television spot, recruitment from neighboring schools and HERN tuition waivers boosted the enrollment. On June 18<sup>th</sup>, ECELL 1997 opened its summer program at Dole Intermediate and Ma'ema'e Elementary Schools.

In this article, we describe the evolution of ECELL and share some of the insights that we have gained over the past five years. ECELL was created as a "Collaborative Learning Laboratory" for both pre-service and in-service teachers

aimed at transforming the design and delivery of learning through collaboration, reflection, use of best practices and the most effective uses of emerging technologies. Our approach was grounded in the foundational beliefs of the Hawaii Education and Research Network (HERN) whose goal was to initiate fundamental changes in the way teachers teach and how students learn.

### HERN, a Catalyst for Educational Reform in Hawai'i

The HERN project was a product of the Hawaii Educational Networking Consortium (HENC), a collaborative relationship established in December 1993 that included the University of Hawai'i, the Hawai'i Department of Education (DOE) and the East-West Center. Its purpose was to promote cooperative activities among the partner institutions in the development and use of educational telecommunications.

In 1994-95, Hawai'i had boldly committed the state to implement high-speed networks that would link all UH and DOE campuses with voice, data and video connections by the year 2000. This same year, a three-year research demonstration project was awarded to the Department of Education and the University of Hawai'i through the National Science Foundation Networking Infrastructure for Education Initiative. This project, named the *Hawai'i Education & Research Network (HERN)*<sup>3</sup>, was established to investigate the impact of online information technologies and act as a catalyst of school reform. Research entailed a systematic inquiry into school management, institutional structures, connectivity, and technology use and support. We sought answers to the following questions:

- What types of organizational and management structures best support the deployment and operation of a statewide educational network?
- What technological and management issues would be faced in knitting together Ethernet-over-CATV networks provided by cable TV companies throughout the State?
- What set of network interfaces and filters would support appropriate educational access to the Internet at all levels across an entire State?
- How could effective training be provided to an educational community numbering in the hundreds of thousands?
- How could collaborative curriculum development and delivery be supported over the Internet?

An important goal of the work of HERN was the "bootstrapping" of a network infrastructure, physical and

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human, to support the transformation of schools and teaching. Technology is not simply an add-on to the school curriculum, but offers the promise of transforming education in powerful new ways. As Dr. Philip Bossert, HERN's Project Director, expressed it:

*Advances in technology can never automatically substitute for the changes that must take place in our schools and classrooms. The work of educators in this decade is not only the work of installing and utilizing hardware and software. It is the work of transforming American schools so that patterns of teaching and learning reflect the spirit of inquiry that is the basis for all science.*

The statewide network, therefore, helped to generate a new set of opportunities for Hawaii's students and teachers that would enable them to take charge of their own learning and become providers of information rather than passive participants in educational programs. Teachers were to become "learning facilitators who are members of interdisciplinary teams and 'co-learners' along with their students. The school day would be restructured into flexible work schedules that allow and promote 'project-oriented' — rather than 'lesson-oriented' — learning programs" (Bossert, 1995).

HERN <<http://www.hern.hawaii.edu/hern>> brought together interdisciplinary teams of teachers, curriculum leaders, technology specialists and school administrators in a series of three summer institutes followed by a year-long development program. Each year began with an intensive 2-week summer institute. Teams were formed and quickly involved in summer workshop sessions, briefings, collaborative study groups, lectures and hands-on seminars <[http://www.hern.hawaii.edu/hern96/workshop/workshop\\_toc.html](http://www.hern.hawaii.edu/hern96/workshop/workshop_toc.html)>. Participants formulated team projects that aimed to create new learning opportunities through the use of information technologies. Support was provided throughout the following academic year through on-line, television-based, and in-person activities designed to support the ongoing projects and participants' learning.

Local, national and International leaders in the field educational technology <<http://www.hern.hawaii.edu/hern95/bios/keynote.html>> contributed their expertise and shared resources. Chris Dede, Professor at George Mason University in Fairfax, Virginia, and Jim Dator, Professor and Director of the Hawai'i Research Center for Futures Studies at the University of Hawai'i at Mānoa were among those who offered their insights into technology forecasting, assessment, emerging technologies, and strategic planning. Legislators like Senators Carol Fukunaga and David Ige contributed their valuable experience in understanding the context of a state-wide telecommunication's system. Christine D. Collins, a sixth-grade teacher at Hillside Elementary

in Minnesota, inspired local teachers to explore the uses of the Internet for instruction. In addition, over sixty faculty from across the University of Hawai'i system, teachers and administrators from the Department of Education and the Hawai'i Association of Independent Schools contributed a comprehensive selection of more than 120 workshops that focused on such issues as management, institutional structures, connectivity, and the use and support of our state-wide telecommunications system.

Ultimately, the goal of HERN was to "work itself out of existence" (Wedemeyer, 1995). We operated on the understanding that at the end of the three-year grant period the training and support functions that HERN provided would become a part of the institutional practice of the University and DOE. Did we succeed in this task? HERN has undoubtedly had an extensive and lasting impact on many educational institutions in Hawaii. Teachers from more than 100 learning institutions in the State participated in HERN activities. These institutions consisted of 30 high schools, 18 intermediate schools, and 49 elementary schools in the State's Department of Education. Many participants were also drawn from the University of Hawai'i system, which consists of ten independent university and community college campuses, an employment training center, and five education centers located on six islands. Thus HERN impacted, both directly and indirectly, approximately 70% of the students, faculty and staff who are involved in education in the state.

### Beginnings of ECELL

ECELL began as one of the projects that HERN helped to bring into existence— one that brought some new partners into the network, namely College of Education faculty and student teachers enrolled in the Master of Education in Teaching (MET) program. The MET program is an intensive two-year graduate program designed for students who already possess a Bachelor of Arts or Bachelor of Science degree. It places emphasis on fieldwork and requires students to be inquiring, reflective, and collaborative. The principles of the MET program are in close agreement with the ones that we had operated with in HERN and so we had no difficulty in agreeing to work together.

ECELL was envisioned as an experimental school that would allow us to explore new models for designing, implementing and managing new learning environments. It was a school that would allow us to model new forms of transformative pedagogy, and truly explore the "role of the classroom in the emerging era of information technology."

ECELL was more than just a summer school that offered courses in technology; it was a combination of ideas— a new type of school and a professional development laboratory for teachers, student teachers and administrators. Our challenge was to encourage professional renewal in a summer

program setting. Our planning was guided by the following questions, which lent direction to our experimental approach.

1. What is the role of the classroom in the emerging era of information technology?
2. What are the indicators of pedagogical transformation and factors that foster the desired changes?
3. Will the MET students and veteran teachers in the program become catalysts for change as they begin their teaching experiences during the school year?
4. What will be the impact of this transformation of teaching on student learning?
5. What are the barriers that can be changed? Cannot be changed?

The five years of ECELL were “evolutionary.” Each year built on the successes and the lessons of the previous year. Our planning was collaborative, and we took time to discuss the insights gained from previous years efforts. We addressed challenges, explored current research on teaching and learning, and adapted our methods to include state initiatives, such as the new Hawai’i content standards.

Thus, ECELL can be described as an exploratory professional renewal process driven by a desire to encourage a transformation in pedagogic methods and school structure. These changes were to be made possible by an intensive, technology-rich learning environment. Six underlying themes underlay the ECELL approach.

1. Teachers are designers, developers, reflective learners engaged in collaborative reflective inquiry.
2. ECELL is a “Collaborative Learning” Lab for all Learners.
3. Teaming pre-service with in-service teachers is productive and encourages innovation.
4. Performance-based learning contributes to self renewal and contributes to the scholarship of teaching and learning.
5. Technology is a catalyst for creating transformative learning environments.
6. Supportive Structures - Collaborative Partnerships – Collegial Mentoring are essential in fostering new insights in the learning process.

In each of the five years of ECELL it is possible to discern three phases in the process of professional renewal.

### Phase I—Building a Learning Community

Each year, ECELL began with a “Call for Participation” to groups of student teachers enrolled in the Master of Education in Teaching program and veteran teachers at DOE

schools. Anyone interested in teaching in the program could submit a proposal outlining areas of inquiry and themes for implementation. Once a group of student teachers and teachers were chosen, we began the work of planning in a serious way. We met together in a series of planning and technology training workshops. This provided opportunities to get to know each other and a learning community began to take shape that included MET student teachers, DOE veteran teachers, administrative personnel and support staff including teacher mentors and resource people.

### *Teachers as Designers, Developers, Reflective Learners*

An important initial step in the process was to produce a rethinking of the role of the teacher. We expected the teachers to see themselves as “curriculum designers” rather than passive participants. Planning took place in a collaborative learning environment where both in-service and pre-service teachers saw themselves as colleagues.

Teams spent much of their time during this phase defining the goals of their respective inquiries. Unlike the traditional workshop-based training, the perspective shifted from externally imposed products to a process of reflective inquiry directed to their own professional growth. Teachers considered questions such as the following:

- What are you hoping to do better than you’re doing now by integrating the information technologies?
- What pedagogical / curricula objectives are you trying to achieve through technology?
- Inquiry focused on an issue / area of teaching - What do you envision your classrooms to look like at the end of ECELL?

(See Kathy Yamashoroya’s list of the types of projects that emerged from these sessions on page 32).

### *Technology as a Catalyst to Creating A Collaborative Learning Environment*

A central component of the inquiry was the immersion of participants in a technology rich learning environment as teacher learners. A dynamic online listserv <<http://ecell2.k12.hi.us/2001/pd/listserv/index-listserv.html>> was used as a forum and support mechanism for teachers as they formulated their professional inquiry. The development of this online community was a critical component for the MET and veteran teachers not only in shaping their inquiries but in forming teaching teams who designed units of study to offer as summer projects / courses. They helped in turn to create similar learning communities for their students. Professionals residing outside Hawai’i and resource experts like Patti Weeg also participated in this learning community <<http://ecell2.k12.hi.us/2001/pd/patti/index-patti.html>>.

An extensive online resource site with participant contributions grew as the professional development process evolved. Resources were posted to support project planning <<http://ecell2.k12.hi.us/2001/pd/resources/projplanning.html>> and development <<http://kalama.doe.hawaii.edu/~ellenm/ecellplan/pdmod1/projdev.htm>; <http://kalama.doe.hawaii.edu/~ellenm/ecellplan/pdmod1/projdev.htm>> as well as to reveal the thinking behind the development of the summer courses. This resource site served as a model for teacher teams as they designed their own online resource-learning environment for their summer courses.

### *Performance-Based Learning: Contributions to the Scholarship of Teaching*

During the third year of the project, we began to develop the idea of culminating tasks that would illustrate teachers' professional development. For example, some teachers developed an online teacher portfolio as their culminating project <<http://ecell2.k12.hi.us/2001/pd/resources/portfolioplans2.html>>, while others made a presentation at the LEI Aloha Conference (see article by Curtis Ho in this issue).

The use of teacher portfolios provided a framework for teachers to capture the processes that validated their current inquiries and expectations. They used it to address issues that affected their practices and identify goals that furthered their professional development. Reflection was encouraged and teachers were able to share their progress, insights, and problem solve with each other through the online ECELL learning community. Giselle O. Martin-Kniep, in *Capturing the Wisdom of Practice*, offers a valuable insight into this process when she states:

*Teachers' daily experiences with students provide them with tremendous opportunities to understand and assess their own practices. Whereas teachers can learn some of the knowledge, skills, and dispositions embedded in teaching in pre-service and in-service educational programs, they can become effective teachers only if they fully understand learning from within. Such knowledge comes from a capacity to reflect upon and appreciate their own learning process and that of others.*

The LEI Aloha Conference provided another venue for teachers to share what they had learned. They were able to explore issues with colleagues at other schools and seek recognition and validation as teacher researchers for their insights, successes, and challenges <[http://www.hawaii.edu/coetech/Workshops\\_Institutes/elearning\\_schedule.htm](http://www.hawaii.edu/coetech/Workshops_Institutes/elearning_schedule.htm)>.

### **Integrating Preservice and Inservice Teachers**

As participants became comfortable with this learning community, and as they became aware of all the learning

opportunities available to them, partnerships of MET students and veteran teachers emerged. The veteran teacher brought the experience while the MET teachers were usually more familiar with the technology. Together they contributed to the innovative spirit of the team. The synergy that developed had a positive impact on both groups. Participants' portfolio reflections indicated the dynamic interaction of this teaming format.

### *Supportive Structures*

While they were planning their projects, teachers were also enrolled in a University course, TECS 570, which offered instruction and support in curriculum development. In fact, the course ran as a thread throughout the three phases of the program and helped participants focus on the renewal aspect of their work. Based on the teachers' inquiries and course offering for the summer, relevant and timely sessions were offered as scaffolds to support sustained professional development. <<http://ecell2.k12.hi.us/2001/pd/pd-sessions/index-pd.html>> The following resources and tools were offered in a variety of formats to help build a sense of community as well as to nurture participants' inquiries. Sometimes they were offered in face-to-face situations and sometimes online.

- Tech Tools for Community Building
- Teacher Inquiry & Reflection
- Project Based Learning
- Internet Style of Learning & the Global Classroom
- Technology and the diverse learner

The Teacher Education and Curriculum Studies Department and the Educational Technology Department sponsored TECS 570 and ETEC 571, which translated to six credit hours of work. The format and resource support were flexibly designed to provide "in-time learning." A team of teacher mentors, along with onsite administrators provided the daily supportive infrastructure. Students who were working for their Master's in Educational Technology and support staff for the LEI Aloha, U.S. Department of Education PT3 Grant provided support in technology seminars and teacher preparation necessary for the culminating LEI Aloha Conference.

### **Phase II Learning in Collaborative Learning Laboratory**

Each year, ECELL enrolled between 200 – 250 students from over 45 projects located in 4 or 5 school sites, including online students from neighboring islands, Maryland and Denmark. The student population was diverse. It included multi-aged, heterogeneous classrooms. Students represented a wide range in terms of academic performance. They also involved a fair share of second language learners in grades 1 through 12. A site administrator and a team of

mentors provided the daily support for each of the teams. The teachers' units of studies offered as summer session projects or courses for students. The projects and courses served as a laboratory designed to maximize success and optimize learning in a "high transformation" learning environment <<http://ecell2.k12.hi.us/2001/pd/joann/technology.htm>>.

Student units were project-based and driven by the Hawaii content, performance and technology standards. Each unit included a professional renewal project that the teacher was pursuing in his/her professional inquiries. Many focused on demands of teaching in an era of quickly evolving technology. They involved:

- Inquiry based learning focusing on developing essential learnings, students as problem solvers, independent learners, critical thinkers, collaborators and effective practitioners of basic skills and technology
- Standards based curriculum
- Performance assessment
- Collaborative grouping
- Multi-content integration
- Differentiated learning

Throughout the summer session, each project evolved in its own unique way into a distinctive community of learners. Project websites <<http://ecell2.k12.hi.us/now.htm>> provide a window on the development of the project or course from defining the student inquiry, culminating tasks to the assessment of student performances of the identified content and performance standards.

#### *Technology as a Catalyst in Transformative Learning Environments*

Much of the tools and strategies used in ECELL provided students with up-to-date technological skills and enabled them to become critical consumers and producers of educational technology. Engagement in performance-based tasks allowed students to formulate questions, collaborate with others, conduct research, draw conclusions, and take action on real-world issues/problems.

Each classroom was equipped with 6-8 computers (each connected to the Internet) and a printer and scanner. Basic software on all computers included email, web browser, HTML editor, graphics program, word processor, spreadsheet and database program. Each child was provided with an email account. Email was used extensively to disseminate information, gather data and collaborate on ideas. Developing web sites and doing presentations with PowerPoint, website or video were ways students presented their culminating products.

#### *Performance Based Learning*

A portfolio and conference presentation concluded the summer phases of the program and served as a means of recognizing each teachers' professional growth. These activities also provided a spring-board for the next steps in the participants' inquiry. Portfolios included each participant's analysis and reflection of his / her work in progress. Carolyn Morita who offered the "Lucky You Live Hawai'i" course at Moanalua High reflects,

*It was interesting to discover my preferred learning styles and then compare them with those of the students. Unsurprisingly my teaching style is directly correlated to my learning style. It then became a conscious effort to plan lessons which addressed those who learned differently.*

The LEI Aloha Conference provided "public" recognition of the participants' efforts and their distinctive contribution as participant researchers <[ecell2.k12.hi.us/2001/plan/ecellplan/leialoha/index-conf.html](http://ecell2.k12.hi.us/2001/plan/ecellplan/leialoha/index-conf.html)>. Teachers saw themselves as part of a larger learning community—a novel experience for many of them. Evaluations of the conference presentations provided an authentic source of assessment for the teaching teams. All of the project teams' sessions scored an average of 4.3 on a scale of 0 – 5 on a series of items relating to their presentations.

#### **Phase III—Extending the Learning Community Beyond ECELL**

The "next steps" phase, which occurred after the summer projects and courses, is of significant importance as a means of extending ECELL's goals beyond the summer school. As veteran teachers returned to their classes and MET students began their new teaching assignments, the online forum became an important support mechanism—a way of extending the learning community beyond the time limits of the summer program. Participants continue to return to the forum and the ECELL community to share new experiences and resources, seek advice, and keep up with the current happenings with ECELL colleagues.

In their portfolios, teachers identified this next phase as critical in realizing their professional development gains and in making changes to their teaching practices. Rene Fujimoto, who offered the "Activism Workshop: Exploring Community Social Issues" course at Moanalua Middle School relates:

*I am in the process of modifying the course curriculum so that it is substantive and appropriate for eighth graders. The intent is to replicate the curriculum during the 2001-2002 school year as an Interdisciplinary Unit for a Core Team. To support this, I see using reflection activities regularly throughout the class period to assess*

learning and attainment of quality products, requiring students to consistently solicit feedback from other students to improve their products, trying to find online learning partners for different subjects and to build class community <[http://ecell2.k12.hi.us/2001/projects/mms2/renees\\_ecell\\_pd\\_portfolio.htm](http://ecell2.k12.hi.us/2001/projects/mms2/renees_ecell_pd_portfolio.htm)>.

Lynne and Dawn Sueoka, who taught the 30 fps: Video Production Professional Development Portfolio—at Moanalua High School in 2001, see the wealth of past ECELL projects as a resource for future courses:

*The project web sites are great resources, both as providers of content and as models of student created resources online. The PD portfolios are great examples of reflective practice and the listserve reflection and online documentation of inquiry would be great models for other campuses to follow* <<http://ecell2.k12.hi.us/2001/projects/mohs4/30fps-portfolio/next-steps.html>>.

Many have exceeded what they imagined. Two of the project teams had their summer courses featured on the "ETEC Connections," <<http://www.hawaii.edu/etec-connections/video.htm>> a video presentation aired on Hawaii Public Television, KHET, in association with Nature, Nova and Frontline along with daytime programming of Department of Education in-school broadcasts. These programs are produced by the University of Hawaii's Educational Technology Department and feature innovative applications of technology in Hawaii's schools.

Based on the ECELL experience, a school-wide professional development model was implemented during the 2001-2002 year at Moanalua High School. Principal Darrel Galera has been active in ECELL leadership since it began in 1997. His four vice principals and professional development coordinator at Moanalua High School are now incorporating the lessons of ECELL into their school-wide plan <[www.mohs.k12.hi.us/index2.html](http://www.mohs.k12.hi.us/index2.html)>.

### *Collaborative Partnerships*

For the past five years, ECELL partners have gradually refined to the ECELL professional renewal model. HERN support was the early catalyst for initiating the project. The MET program lent valuable support as did the Hawai'i Institute for Educational Partnerships. The LEI Aloha Team came on board during the 3<sup>rd</sup> and 4<sup>th</sup> years of the program and provided a venue for the teachers to demonstrate their work at the LEI Aloha Conference. Resources from various learning institutions in Hawai'i, online global experts and educators have all benefited ECELL and, more importantly, have helped to build a valuable "human infrastructure" so essential in providing the diverse perspectives and fostering new insights into rethinking teaching and schooling in the information age.

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