Project #: C-36-X98  Cost share #:  
Center #: 10/24-6-R0091-0A0  Center shr #:  
Contract#: AGREEMENT DATED 960827  Mod #:  
Prime #:  
Subprojects ?: N  
Main project #:  

Project unit:  

Project director(s):  
KOLODNER J L  

Contract: AGREEMENT DATED 960827  
Prime #:  
Subprojects ?: N  
Main project #:  

Project unit: COMPUTING  Unit code: 02.010.300  

Project director(s):  
KOLODNER J L  

Award period: 960901 to 970831 (performance) 970831 (reports)  

Sponsor amount New this change Total to date  
Contract value 10,000.00 10,000.00  
Funded 10,000.00 10,000.00  
Cost sharing amount  

Does subcontracting plan apply ?: N  

Title: LEARNING BY DESIGN: IMPROVING MATH & SCIENCE EDUCATION THROUGH INTEGRATION...  

PROJECT ADMINISTRATION DATA  

OCA contact: Ina R. Lashley  
Sponsor technical contact  
APRYL LANE  
(408)974-1588  
APPLE COMPUTER, INC.  
MS: 301-4C  
ONE INFINITE LOOP  
CUPERTINO, CA 95014  

Sponsor issuing office  
APRYL LANE  
(408)974-1588  
APPLE COMPUTER, INC.  
MS: 301-4C  
ONE INFINITE LOOP  
CUPERTINO, CA 95014  

Security class (U,C,S,T,S) : U  
Defense priority rating : NA  
Equipment title vests with: Sponsor X  

GIT  

ONR resident rep. is ACO (Y/N): N  
NA supplemental sheet  

Administrative comments -  
INITIATION OF ONE-YEAR "COST-REIMBURSEMENT RESEARCH PROJECT AGREEMENT".  
*NOTE: SEPARATE LICENSE & CONFIDENTIALITY AGREEMENT ARE IN PLACE.
Closeout Notice Date: 26-JAN-1998

- **Project Number**: C-36-X98
- **Center Number**: 10/24-6-R0091-0A0
- **Project Director**: KOLODNER, JANET
- **Project Unit**: COMPUTING
- **Sponsor**: APPLE COMPUTER/CUPERTINO, CA
- **Division Id**: 3625
- **Contract Number**: AGREEMENT DATED 960827
- **Contract Entity**: GTRC
- **Effective Completion Date**: 31-AUG-1997 (Performance) 31-AUG-1997 (Reports)

### Closeout Action:

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<td>Final Report of Inventions and/or Subcontracts</td>
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### Distribution Required:

- Project Director/Principal Investigator: Y
- Research Administrative Network: Y
- Accounting: Y
- Research Security Department: N
- Reports Coordinator: Y
- Research Property Team: Y
- Supply Services Department/Procurement: Y
- Georgia Tech Research Corporation: Y
- Project File: Y

**NOTE:** Final Patent Questionnaire sent to PDPI
TOOLS FOR CONSTRUCTION OF COMPUTER-SUPPORTED COLLABORATIVE LEARNING ENVIRONMENTS

Janet Kolodner
Mark Guzdial
Principal Investigators
EduTech Institute, College of Computing, Georgia Institute of Technology

FINAL REPORT

Our research over the last year has focused on both Computer Supported Collaborative Learning (CSCL) environments and tools for constructing such environments. We've explored a variety of options and have had several important successes.

We did explore use of SK8 for our environments and construction kits, but decided that the cost in memory and processing power was too great. While the cost of using SK8 is diminished by placing it only on the server, the schools we've been working with have little Internet connectivity, which requires us to play a server within the school. High-powered machines that can run SK8 are not frequently available to use as servers in our projects.

We instead used a couple of different paths:
- We made extensive use of a Macintosh-based tool called Frontier (http://www.scripting.com/frontier/) Frontier has allowed us to create a variety of Web-based CSCL environments quickly, such as Mac-based version of CaMILE (http://www.cc.gatech.edu/gvu/edtech/CaMILE.html) and Web-SMILE (http://www.cc.gatech.edu/gvu/people/Faculty/mark.guzdial/WStour/tour.html). These tools have been instrumental in helping us to understand how to scaffold collaboration by integrating process guidance.
- We have developed a new, cross-platform tool called the Pluggable WebServer (http://www.cc.gatech.edu/fac/mark.guzdial/squeak/pws/) which is based in Squeak, originally developed in Apple Research. The Pluggable WebServer has allowed us to very quickly create a variety of customized...
collaboration spaces, including spaces for teachers, spaces for faculty, and domain-specific classroom spaces.

We've published extensively on this research, including the following:


