

**ACCESS AGENDA TO REFORM
COMPUTER SCIENCE EDUCATION
IN CALIFORNIA:
Addendum to
In Need of Repair:
The State of K-12 Computer Science Education in California**

March 2012

**A Working Agenda for ACCESS: the
*Alliance for California Computing Education
for Students and Schools***

Authored by
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Alliance for California Computing Education for Students and Schools

The Alliance for California Computing Education for Students and Schools (ACCESS) is a statewide network of computer scientists and education policy experts across institutional levels, non-profits and government engaging in an advocacy movement and policy campaign to provide all California K-12 students access to high-quality computer science education.

ACCESS Membership

- Key computer science education stakeholders in California
- K-12 administrators and teachers
- CS higher education: community colleges through universities
- Education schools/teacher preparation programs
- California educational policy staff
- California CS&IT industry leaders
- Relevant non-profits/policy organizations
- CSTA leadership
- Computing in the Core leadership

ACCESS Steering Committee

- Chair: Debra Richardson (Founding Dean, Bren School of ICS, UC Irvine)
- Gail Chapman (ECS Director of National Outreach, UCLA)
- Joanna Goode (University of Oregon and ACM Education Policy Committee)
- Dan Lewis (Former Chair of Computer Engineering, Santa Clara University)
- Jane Margolis (Graduate School of Education and Information Studies, UCLA)
- Chris Stephenson (Executive Director, Computer Science Teachers Association)
- Ignatios Vakalis (Chair of Computer Science, Cal Poly San Luis Obispo)
- Cameron Wilson (ACM Director of Public Policy, Computing in the Core), input

ACCESS Goals

- Securing and elevating the status of K-12 computer science education
- Assuring equitable access to computer science for all California K-12 students
- Establishing a computer science certification pathway for California K-12 teachers
- Updating state standards for computer science education and state requirements for graduation from secondary education

In Need of Repair: the State of K-12 Computer Science Education in California

The ACCESS agenda, as presented in this document, is founded on the report “In Need of Repair: the State of K-12 Computer Science Education in California,” which describes the general K-12 education landscape in California and also provides details related to the current state of computer science education in the state.

ACCESS Agenda

The ACCESS agenda consists of a series of activities that ACCESS will work toward. ACCESS itself (or sub-groups within ACCESS) will strive to achieve some of these activities. Other activities require ACCESS to collaborate with other organizations such as the department of education or various leadership offices for postsecondary education in the state. Still other activities ACCESS and its members will promote but by their very nature must be pursued by other entities such as school districts or the state legislature.

ACCESS Equity Resolution

ACCESS is committed to assuring that quality computer science education is available to all California K-12 students, specifically assuring equitable access and engagement for traditionally under-represented students in the field of computer science.

Resolved November 7, 2011 and approved unanimously.

ACCESS Advocacy

1. Complete and approve the report, “In Need of Repair: The State of K-12 Computer Science Education in California”.
Resolved November 7, 2011 and approved unanimously.
2. Align CS education efforts with CTE in parallel with CTE standards revision, which is emphasizing linked learning, by advocating for computer science as a central aspect of both college preparation and career readiness; in particular, promote ECS as the introductory course for all IT [ICT] pathways (LAUSD offering of ECS is already approved as both CTE and “g” academic credit) –
Resolved November 7, 2011 and approved unanimously
(This will require engaging with political leaders, school leaders, and leaders of groups such as the Linked Learning Alliance, the California Partnerships Academy, the National Academy Foundation.)
3. Identify multiple successful computer science education models in K-12 schools that can be emulated in other schools to improve computer science education.
4. Build relationships with education leaders in the California legislature, Department of Education (CDE, especially the Career and Workforce Innovations Unit), the Commission on Teacher Credentialing, the University of California Office of the President, the California State University Office of the Chancellor, the California Community Colleges Chancellor’s Office, and the Mid-Pacific Information and Communications Technologies Center.
5. Develop talking points and advocacy pieces based on the “In Need of Repair” report and this addendum – to be distributed to legislators, CDE, K-12 policy makers, and district administrators – message to communicate:
 - a. the importance of computing to 21st century academic and career success,
 - b. the current computer science education landscape,
 - c. the options available for local and state reform, including successful

computer science education models.

6. Promote increased accessibility of high-quality computer science courses (e.g., ECS, AP CS Principles and/or AP CS A) first in key districts and then throughout the state:
 - a. Capitalize on local control by identifying key districts (“CS friendly”) where early progress might be more likely;
 - b. Meet districts where they are and provide guidance as to how they can add CS courses over time without abandoning their current structure;
 - c. Advocate for replacing high school technology courses with either ECS or CS Principles – in particular identify districts where there are no “a-g” credited computing courses and encourage them to introduce ECS as a CTE foundations course and also satisfying “g” credit. Note that this linked learning option will provide greater access to high quality computer science content to more students.
7. Develop a strategic plan that outlines local and state reform efforts, including strategies for achieving stated goals with an emphasis on indicators that will highlight educational equity in computer science education.
8. Enlist industry leaders (both high-tech and other sectors where computer science knowledge is required) to advocate the need for computer science education for the health of California’s economy.
9. Engage with California CSTA chapters (and the leadership cohort members) to provide advocacy training for teachers and supportive administrators to enable them to better work at the school, district and state levels to improve computer science education.
10. Engage leaders in other STEM education organizations – such as Connect Ed, California STEM Learning Network, Level Playing Field Institute, Project Lead the Way, Change the Equation, WestEd – and encourage them to explicitly include support for computer science education within their mandates.

CS Positioning

11. Strive for consistent “g” credit for ECS, AP CS Principles, and AP CS A (in particular, we do not propose to launch an effort to create an additional “h” subject category for computing/technology or to push to include computer science courses in the “c” or “d” subject categories).
Resolved November 7, 2011 and approved unanimously, with the caveat that we do not repeal any local situation where CS courses already qualify for “c” or “d” credit.
12. Obtain program status as “g” credit to cover all ECS courses in California (LAUSD offering of ECS already approved as both “g” credit and CTE).
Resolved November 7, 2011 and approved unanimously, to be completed by ECS team:
 - a. *ECS team will define guided flexibility in different lessons within the ECS curriculum, specifically including ICT issues such as networking in some of*

the lessons;

- b. ECS team will “police curriculum fidelity” of ECS course offerings, allowing for teacher creativity, flexibility and *adaptation while protecting the intended learning core* of the different units.

- 13. Describe and gain approval for one or more computer science program(s) of study, strategically aligned with CTE pathways. Some possible examples:

<u>Program of Study 1</u>	<u>Program of Study 2</u>	<u>Program of Study 3</u>
Exploring CS	Exploring CS	Exploring CS
AP CS Principles	Web Design	Game Design I
AP CS A	E-Commerce	Game Design II

A variety of programs of study focused for career preparation within the IT [ICT] CTE career pathways could substitute different concentration and/or capstone courses but would include ECS as the introductory course, per advocacy item #2. *Resolved November 7, 2011 and passed unanimously.*

Credentialing and Professional Development

- 14. Develop a CS Teaching Methods course that would provide the requisite technical content and pedagogical content knowledge to teach computer science (currently under development by Joanna Goode with funding from NSF as part of UCLA’s MOBILIZE project, beta tested Spring 2012 at UCLA)
Resolved November 7, 2011 and passed unanimously.

- 15. Develop a supplemental authorization in Computer Science (not exclusive of developing a future CS credential)
Resolved November 7, 2011 and passed unanimously.

- 16. Promote increased professional development opportunities, with specific availability in key districts first and then throughout the state.

Longer-term activities:

- 17. Establish an Experimental Computer Science Teaching Credential, for which there appears to be support from the California Commission on Teacher Credentialing (to be offered first at UCLA and then expanded to schools of education throughout the state)
Resolved November 7, 2011 and passed unanimously.
- 18. Advocate for a single subject teacher certification in computer science for California.
- 19. Advocate for computer science as a high school graduation requirement in California (i.e., at least one computer science course for all graduating students).