CS Equity Case Study:

The Process and Impacts of a District-Wide Resolution

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(March 2023)

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This case study explores the impact of a school board resolution in the Los Angeles Unified School District (LAUSD) to expand access to Computer Science education for students and professional learning for teachers. LAUSD has done a lot of work around increasing computer science education in its district, which serves predominantly Latinx students. LAUSD student demographics include 72.3% Hispanic, 10.1% White, 6.1% African American, 6% Asian American, 2% Filipino origin, and less than 1% Native American and Pacific Islander students. Over 81% of students receive free or reduced lunch. The District covers 710 square miles including Los Angeles as well as all or parts of 25 smaller municipalities plus several unincorporated sections of Los Angeles County. This case study describes how the resolution was created, its challenges, and the outcomes for scaling up CS education district-wide. The Los Angeles Unified School District, the second largest in the nation, enrolls more than 565,000 students in K-12th grade.

How it Started: Moving from Devices for a Few to CS for All

In 2015, the Common Core Technology Project focused on one hundred schools committed to technology integration, by supplying computing devices, as well as technical and coaching support. This initiative was part of then-LA Unified Superintendent Ramon Cortines' task force of principals, community members, parents, students, local district, and central office administrators, who provided recommendations aligned with the Instructional Technology Initiative (ISTE) standards. Because these standards included the promotion of computational thinking, a strategic decision was made to move computer science to the instructional technology initiative (ITI) office, instead of the elementary and secondary content departments. As a result, ITI became more involved in the national CSforALL movement, NSF's Expanding Computing Education Pathways, and CSforCA (known at the time as ACCESS). CSforAll encouraged districts across the country to make public commitments to improve CS access and engagement in CS. LAUSD was also inspired by San Francisco Unified School District's commitment to passing a board resolution that built CS into the school day and decided to make their own commitment to broaden participation. As an early partner with Code.org and UCLA, LAUSD worked in close partnership with the school board and introduced a resolution by board member Tamar Galatzan in 2014 that was passed to offer a computer science curriculum to K-12 students, along with a budget set aside to provide a laptop to every LAUSD student. Initially, a focus on CS provided a pedagogical justification for board members who were interested in enhancing LAUSD students' access to devices. Although ITI wanted the resolution to focus on being instruction-driven rather than device-driven, thereby highlighting the importance of well-trained teachers implementing a strong curriculum for students, the resolution made allowances for implementing devices which ultimately facilitated its acceptance by some board members.

Photo Courtesy of LAUSD

UCLA researcher Jane Margolis and her team studied disparities in access to CS education in LAUSD. As a result, her research findings highlighted how there were unequal learning opportunities in CS education. Then, UCLA teamed up with LAUSD to address these inequities. LAUSD board member Tamar Galatzan recognized the urgency of expanding CS opportunities throughout the district and introduced a resolution to close this gap. At the time, the 2014 resolution directed LAUSD Superintendent John Deasy to identify CS opportunities within LAUSD and a plan to expand CS course offerings and manage associated costs. In the years following, the ITI division was created in 2016 to expand CS course offerings and then LAUSD became part of the national CSforALL movement. Then, another resolution was passed in 2018. Equipped with research and key data provided by the ITI team and partners at UCLA, then Superintendent Dr. Michelle King advocated for the resolution.[1] Through sharing information and evidence-based practices, Superintendent King communicated the resolution's potential impact, and she became one of ITI's most powerful supporters. The passage of the 2014 board resolution represents LAUSD's institutional commitment to addressing structural barriers to the implementation of CS education in the district. This also demonstrates how the introduction of a resolution to the education board drives priorities, and in this case, it meant providing more CS opportunities for students.

Measuring Success: Equity and Access

Measuring student outcomes can be complicated, especially when there is so much variability in the curricula being offered, as well as the vastly different preparation teachers have received. For example, evaluating the computer science curriculum requires hard choices for the protocols to measure both teacher and student outcomes. More specifically, how to compare the outcomes of different schools that have limited resources and/or access to computer science courses and the teachers that teach them, as well as the professional learning opportunities and access to resources to support teachers and the courses they are teaching. These are common challenges that school administrators face when measuring outcomes and can make it even more difficult without a strong and mandated computer science curriculum.

[1] Item 28, Hour 5:35

Measuring Outcomes and Engagement 2

- The ITI team is concerned with the impact of instructional practices and how to measure outcomes from a more holistic lens. Although it may be easy to track when students log in or how long they've been looking at a screen, it's more challenging to understand what students learned, what mindset they developed, or whether they feel a stronger sense of agency.

- To get a more nuanced understanding of student engagement, participants share artifacts from classroom implementation, including lesson plans, classroom profiles, reflection activities, and samples of assessment.

- In elementary schools, ITI relies on the self-reporting of teachers about classroom implementation. However, since this reporting is not mandated, monitoring it can be challenging.

- In secondary schools, ITI relies on data reporting through its student information system which is divided by CS courses, schools offering CS courses, and student demographics. This information system allows ITI staff to have better access to data and not have to be too concerned about self-reporting inaccuracies.

Professional Learning Opportunities for Teachers

- All professional learning offerings conclude with surveys that help ITI staff better gauge the quality and relevance of the offering, and how likely it will be implemented in the classroom.

- Instructional coaches receive feedback from educators through coaching cycles, where they debrief with teachers after modeling, co-teaching, or observing lessons. School-based professional learning sessions are followed up with classroom support, lesson studies, and informal classroom walkthroughs with the coach and the school's instructional leadership team.

- ITI features showcases every year, where educators and the public can learn more about CS implementation district-wide, through students and teachers demonstrating the kind of work they are doing in the classroom.

Photo Courtesy of LAUSD

[2] All of these strategies are grounded in ADKAR, the organizational change management strategy ITI utilizes: https://www.prosci.com/methodology/adkar

Challenges and Solutions

Issue	Challenge	Solution
Defining CS	Board members were excited about advances in educational technology and digital tools, but the careful articulation of what CS is, as opposed to "ed tech" or "digital literacy," was necessary to ensure that goals were CS-focused and achievable.r	ITI invited board members to community events around CS, joined CSforCA, and participated in showcases at school sites to demonstrate to community members how students and parents can engage in the CS curriculum. Some of the otheroOther activities that community members participated in included: included: CS hands-on activities, tech fairs, Hour of Code, and activities where administrators learned about CS. ITI also considered including an equity component in CS by looking at different offices to partner with, such as Parent and Community Services. .
Funding	Initially, ITI had to utilize existing resources without extra funds.	Funding has been based on a year-to-year allocation, so there is no guarantee that funds will be in place the following year, and they are dependent on Local Control Funding Formula (LCFF). ITI found creative ways to fund its CS programs through partnerships with Verizon, Amazon Future Engineer, BootUp, and Code.org.
CS Not Being a Mandate	Educators have to focus on what students will be tested on. If schools do not mandate CS courses as elective courses as part of the A-G requirement list, it makes it really difficult to make the resolution a reality. Without CS being a requirement, it is difficult to get educators to sign on to professional development opportunities.	ITI has worked to communicate to different stakeholders the importance of CS for student participation and achievement in college, career, and community engagement. ITI provides hands-on and immersive CS learning activities with parents, families, and the community through pop-up CS Digital Playgrounds and workshops during Board District and Regional District events such as the STEAM Fair and open houses.
CS Teacher Shortage and CS Teacher	One of the challenges that schools are facing is a lack of teachers who have been trained in CS content and pedagogy and who have the authorization to teach CS in the secondary grades.	CS professional development opportunities allow teachers to be exposed to CS concepts that can be integrated into the school day. In addition, the Supplementary Teacher Authorization allows teachers in California to hold a computer science subject teaching credential. Because LAUSD is such a diverse organization, it is important that ITI offers different entry points for engaging teachers in CS.

Challenges and Solutions (cont.)

Issue	Challenge	Solution
Hyper-localized Structure of LAUSD	The decentralized nature of LAUSD means that a big system-level resolution has to then go through six local districts, six different superintendents, and administrators of instruction, and then even subdivided further down to communities of schools.	ITI has made a concerted effort to make this high-level decision something that feels relevant to individual school needs. For example, they aim to connect CS to the instructional priorities of each region/sub-district and connect CS equity to other district initiatives.
Frequently Changing Leadership	LAUSD has had four superintendents since the resolution was passed.	Having consistency within the school board and the establishment in the central office has been helpful in keeping a focus on CS education, but more importantly, being a part of the CSforCA coalition has helped inspire and invigorate ITI as well as feel a sense of community with other educators across the state. In addition, centering the CS initiatives around equity aligns the work with LAUSD's goals more broadly.

Photo Courtesy of LAUSD

This material is based upon work supported by the National Science Foundation under Grant #1837780.

Fig. 1: LAUSD Computer Science Course Offerings[3]

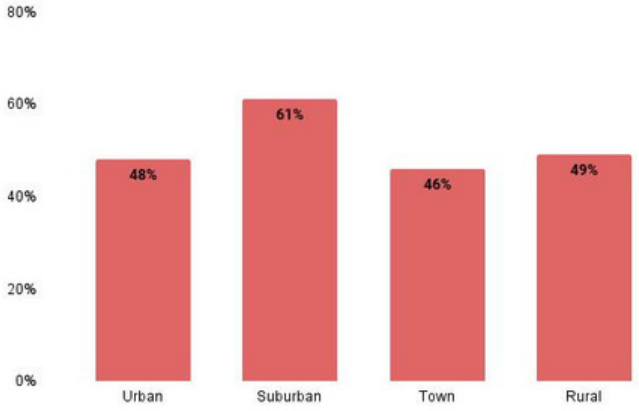


Fig. 2: Computer Science Enrollment in CA High Schools (2018)[4]

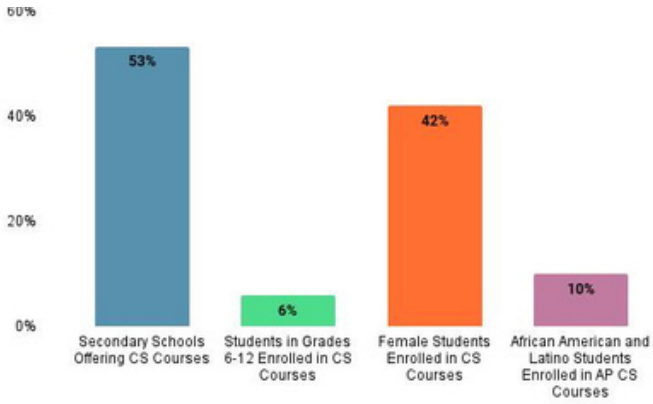
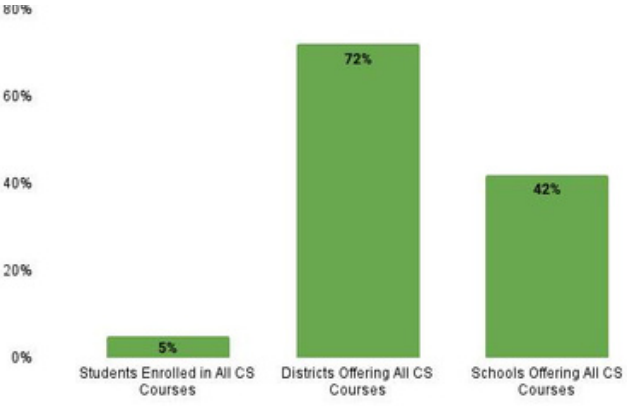


Fig. 3: Access by Geography in the United States (2018)[5]



[3] LAUSD MyData
[4] https://csforca.org/the-data
[5] https://advocacy.code.org/2021_state_of_cs.pdf
[6] https://docs.google.com/presentation/d/1xJCyAUISXxIVHtb7MMGidhVMY6p9W2jCGnUncOgM6ok/edit#slide=id.g189af85ebde_7_0

A Focus on Equity

Having a resolution around CS had a huge impact on who was participating and where. Having it in writing and developing policy around it signaled the importance of CS to the district. Currently, 53% of secondary schools offer CS courses and 6% of students in grades 6-12 are enrolled in CS courses. In terms of race and gender, 42% of girls are enrolled in CS courses and 10% of African American and Latino students are taking AP CS courses.6 Still, despite it not being mandated, LAUSD is engaging teachers from regions across the city, all vastly different socioeconomically and ethnically. In the last two years alone, they have delivered professional development to close to 300 elementary educators, all being trained to integrate CS in their classroom activities and expanding to which students have access and engagement to CS.

Discussion Questions

1. Does your school district use board resolutions to elevate an issue? In what ways can a board resolution help advance your goals for equitable CS implementation?
2. What do you notice about the data displayed in the graphics above? What does this say about equity in computer science education?
3. How can you access data about course offerings in your school or school district? What do you think you might learn? If you don't have access to this data, who would you need to contact?
4. If you were to pursue a board resolution for equity in computer science education, what support might you need and from whom? What are the obstacles you would face and how would you address them? What opportunities or relationships do you currently have that could help facilitate a board resolution?
5. How might you leverage the resources you have at your district to increase access to computer science courses for students?