

Learning with Leadership: Perspectives from a Statewide Research-Practice Partnership Focused on Equity-Oriented Computing Professional Development for K-12 Administrators

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ABSTRACT

While the Computer Science for All (CS for All) movement has led to valuable advancements in equity-oriented curricula and teacher professional development, critical questions remain about how to build the capacity of school and district leadership to implement equitable CS education. How can administrators be supported in decision-making practices so that their school policies facilitate rather than hinder CS for All efforts? Our statewide research-practice partnership (RPP)—representing fourteen different urban, rural, and suburban local education agencies (LEAs) across the state—sought to tackle this question by collaboratively developing, implementing, and iteratively improving upon a guide and workshop for administrators seeking to bring CS into their schools, as well as a multi-stakeholder PD for teachers, counselors, and principals. Both researcher and administrator panelists will share how we built an RPP, lessons learned in creating administrator resources, and details about effective multi-stakeholder PD. In line with SIGCSE’s 2021 call, this panel will inform audience members about how RPPs and a focus on leadership can expand computing education opportunities for more students in K-12 public schools.

CCS CONCEPTS

• Social and Professional Topics • K-12 Education

KEYWORDS

Equity, K-12 Education, Professional Learning, Administrators, School Leadership, Research-Practice Partnership

1 Summary

Funded by the National Science Foundation in 2018, researchers and leadership from school district and local education agencies (LEAs) across the state of California unified to develop a research-practice partnership (RPP) focused on building the capacity of administrators to bring computer science (CS) to *all* students. The

broader CS for All movement has made great strides in advancing equity-minded curricula and teacher professional development [e.g., 1, 2]. However, we recognized that school administrators would benefit from a deeper examination of how their CS for all efforts can be stymied without mindful attention to computing access and inclusion [3]. Our RPP came together to develop and scale resources and professional learning opportunities to support school leadership. Aligned with SIGCSE’s 2021 focus on expanding computing education opportunities, our RPP is dedicated to ensuring all K-12 students have access to equitable and rigorous CS learning. Building on the wisdom of 5 early-adopter LEAs that have been at the forefront of bringing computing into K-12 schools, as well as the perspectives of 9 LEAs seeking to introduce computing into their own schools, our RPP designed an implementation guide and accompanying workshop focused on equitable CS implementation made *by and for* school leaders. We also collaboratively created and implemented two “Summer of CS” events bringing together teachers, counselors, and administrators for multi-stakeholder professional learning and networking.

Findings from both qualitative and quantitative data sources collected after each administrator workshop, Summer of CS event, and nearly a year after the administrator workshop, reveal that administrators highly valued both the guide (titled “The CS Equity Guide”) and the Administrator Workshop. More specifically, administrators appreciated the opportunity to explore definitions of equity, engage with real district data to inform CS implementation decisions, network with other leaders, and learn from fellow administrators. Nearly 100% of Summer of CS attendees valued the multi-stakeholder approach to CS professional development with a focus on equity across all strands of learning together. **This panel represents a range of California administrator and researcher perspectives about ways to broaden CS learning opportunities to *all* K-12 students through: (1) equity-oriented RPPs, (2) administrator professional development, and (3) multi-stakeholder professional learning events.**

2 Panel Structure

Following a brief (5 min) welcome/overview of our RPP project, researchers and practitioners from six geographically diverse organizations across this statewide RPP will present in teams (30 min) about three topics of interest to the SIGCSE community: (1) building a CS for All RPP; (2) impacts of the CS Equity Guide and

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Administrator Workshop developed by and for school leadership; and (3) best practices for multi-stakeholder professional learning events, both in-person or online. A Q&A session will follow the presentations (10 min). Then, attendees will join small discussion groups (25 min) around each of the three topics presented by the panel. In the case of a virtual conference, attendees will join break-out rooms. Discussions will allow participants to network while sharing from their experiences, asking burning questions, and going deeper into issues raised in smaller groups. The last 5 minutes will allow all to share ideas learned across groups.

3 UCLA & AIR Researchers

The UCLA team (Flapan, Hadad, Margolis, Ryoo) has over 2 decades of experience in research and policy focused on democratizing access to K-12 CS education for youth historically underrepresented in CS, resulting in the award-winning book *Stuck in the Shallow End* [4] the creation of the Exploring Computer Science program [1] and CSforCA policy/outreach efforts [5,6] among many other publications and NSF-funded research projects. Joel Knudson has led AIR's efforts in the RPP by facilitating plan-do-study-act cycles of data collection and reflection, and by evaluating the health of the RPP since its inception. These CS-focused efforts build on a foundation of many years spent facilitating and studying cross-district collaborative efforts designed to strengthen professional networks and build the capacity of district administrators to improve opportunities for historically underserved students. Together the UCLA and AIR researchers share expertise regarding CS for All RPP research and evaluation work in collaboration with large and diverse school districts.

4 Sacramento County Office of Education

Jared Amalong and the Sacramento County Office of Education (SCOE) have been actively bringing CS education to students in Sacramento County since 2013. Building on a decade of high school CS teaching experience, Amalong serves as the Director of Computer Science Education. He works with the SCOE team to provide CS professional learning support to teachers, counselors, and administrators from Sacramento County and across California. In collaboration with this panel's RPP, SCOE has led the Summer of CS, a regionalized, multiple stakeholder professional learning model that has served over 1,200 educators in California since 2017. SCOE also leads expanded learning programs to provide CS learning opportunities to over 1,000 students who wouldn't otherwise have access.

5 Santa Barbara County Education Office

Lauren Aranguren is the County lead for the CISC Computer Science and Digital Learning subcommittee, member of the CCSEA Mathematics Community of Practice, Region 8 lead for the California Partnership for Mathematics and Science Education (CAPMSE) and CISC Mathematics subcommittee, member of the Advisory Board for the Center for the Advancement of Instruction in Quantitative Reasoning (CAIQR) at the CSU Chancellor's Office, and former faculty member for the Space, Technology, and Robotics Systems Academy. Matt Zuchowicz is the County lead for the CISC Computer Science and Digital Learning subcommittee, current Vice-chair and former Chair of the California County Educational Technology Committee, and 2017

Santa Barbara CUE Technology Leader of the Year Award recipient. He hosts the Santa Barbara County e-Safety Network with IT professionals and administrators, brought a robotics lending library and symposia to Santa Barbara County, facilitated a county-wide Ed Tech Connect conference, and taught Educational Technology class at UCSB for Multiple Subject candidates. In Fall 2019, Aranguren and Zuchowicz launched the Santa Barbara County CS for All Network for teachers, TOSAs, and administrators working together to implement equitable CS education.

6 Kings County Office of Education

Ed Campos spent 3 years working in the software industry before becoming a high school math and CS teacher. He now works for the Kings County Office of Education as a Math/CS Consultant. Campos's CS advocacy work at Kings County has been to bring CS to a rural/agricultural area that before last year had zero offerings through our RPP's Summer of CS 2020. For the past 4 years, Campos has also worked as part of the Bootstrapworld.org team, training educators around the U.S. in how to integrate CS into their math classes. Campos's mission is to bring the empowerment of CS to Kings County students and students in the Central Valley of California through equitable CS opportunities, increased awareness, and culturally responsive teaching practices.

7 San Francisco Unified School District

Michelle G. Lee serves San Francisco Unified School District which currently has over 20,000 students taking CS classes PK-12. Lee works at the district-level and lead-authored the district's Kindergarten CS curriculum and is co-author of its upcoming pre-Kindergarten curriculum. Lee coaches, co-teaches with, and facilitates hands-on professional development for PK-5th grade teachers and specialists and, over the past three years, has introduced over 11,000 children to CS, launching and directly supporting the district's elementary program at four sites and its early childhood program at five. With joy, she has worked on special projects with MIT's Lifelong Kindergarten Group, ScratchEd at Harvard, and the DevTech Research Group at Tufts. In 2019, Computer Science Teachers Association (CSTA) and Infosys Foundation USA honored Lee's commitment to equity at their national conferences and from 2019-20, Lee served in the inaugural cohort of Equity Fellows for CSTA and led professional development in crafting anti-racist and culturally responsive curriculum for PK-12 students.

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