# SUPPORTING COMPUTING ACCESS, LEADERSHIP, AND EQUITY: 5 ELEMENTS OF A HEALTHY RESEARCH-PRACTICE PARTNERSHIP

## J. Flapan[1], J. Ryoo[1], R. Hadad[1], S. Mendoza[2]

*[1]University of California, Los Angeles (UNITED STATES)*
*[2]Los Angeles Unified School District (UNITED STATES)*

## Abstract

This paper describes a four-year research practice partnership (RPP) dedicated to building capacity to scale and sustain equitable computer science education across the state of California, USA. The acronym of the RPP–SCALE: Supporting Computing Access and Leadership Equity in California–is also the same acronym that describes the five elements of our healthy research practice partnership: Shared Leadership, Collaboration, Application to Practice, Learning is Ongoing, and Equity-Focused. In response to the lack of supports for school leaders to implement equity-centered computer science education, this partnership brings together 17 local education agencies (including public school districts and county offices of education) and educational researchers to understand how to increase leadership capacity that supports meaningful computing learning opportunities for individuals most underrepresented in the field (e.g., Black, Brown, Indigenous, low-income, and female students). Through mixed methods research methodologies, this paper surfaces details about best practices for creating and sustaining RPPs, as well as the positive impacts of the SCALE RPP's activities on partners (e.g., the "CS Equity Guide" and associated professional development workshop for school leaders, Summer of CS initiative, etc.) that were created in response to the partnership's shared goals and interests.

Keywords: Equity and Diversity, Research-Practice Partnerships, School Administrators and Leadership, Computer Science Education, Professional Development, K-12 Education.

## 1 INTRODUCTION [ARIAL, 12-POINT, BOLD, UPPER CASE AND LEFT ALIG.]

In the USA, research-practice partnerships (RPPs) have been building momentum as a powerful and mutually beneficial way to combine the expertise of both researchers and educators to answer pressing problems of practice (Coburn, Penuel, & Geil, 2013). With funding from major organizations encouraging this new approach to improving teaching and learning, many projects have been exploring novel collaborative approaches to conducting research, and particularly in computer science (CS) education.

With support from the National Science Foundation, Supporting Computing Access, Leadership, and Equity (SCALE) is one such RPP in California between 17 local education agencies (LEAs; including public school districts and county offices of education) and researchers from the University of California Los Angeles (UCLA) and the American Institutes of Research (AIR). This RPP originally came together in an effort to address a pressing need in computer science (CS) education implementation across the US, namely that decision-makers (e.g., school district leaders, school principals, administrators, etc.) require professional development and support for to ensure that all students have equal access to meaningful computing education opportunities, regardless of their race/ethnicity, gender, socioeconomic status, ability, home language, etc.

This is especially important considering the larger context of CS education across the US and, in particular, in the state of California. California, home to Silicon Valley, is the 5th largest economy in the world (California Department of Finance, 2018) and has one of the most diverse populations in the country. California is a "majority-minority" state of 5.9 million students who are over 66.1% Latinx, African American, Native American, and Pacific Islander (California Department of Education, 2023). Yet students of color, low-income students, females, and English Learners are extremely underrepresented in CS due to disparities in learning opportunities falling along race and socioeconomic lines (Margolis et. al, 2008).

Currently, only 5% of the 1.93 million high school students in California were enrolled in any type of CS course in 2018-19. And while girls comprise 49% of the high school population, just 30% of students taking CS courses are girls; and girls from all backgrounds (except Asian) are vastly underrepresented. Additionally, rural schools were half as likely to offer CS courses than urban schools, and 34% of schools

serving high proportions of Black, Indigenous, Latinx, and Pacific Islander students offered CS courses in comparison to 52 percent of schools serving a greater proportion of white and Asian students (Koshy et al., 2019).

In response to these unequal CS learning opportunities, the Computer Science for California coalition (CSforCA) was formed in 2013 with the support of diverse stakeholders–including then Lt. Governor Newsom, CA State Superintendent Torlakson, and other high-ranking officials California Department of Education, district leaders, CS teachers, higher education faculty, industry leaders, and parents–all committed to equity in CS education (www.csforca.org).

Building on the national CSforAll movement's momentum and successes, CSforCA was pivotal in introducing two complementary unprecedented statewide initiatives that set in motion the scaling of CS in California: 1) Governor Jerry Brown signed legislation and appointed an advisory board to develop a multi-year strategic CS implementation plan and 2) the California Department of Education adopted Computer Science Standards.

To enact the implementation plan with integrity and equity at the core, researchers from UCLA recognized that it was important to involve practitioner-leaders who understood the complexities of equitable CS implementation. With funding from the National Science Foundation, they sought to create a Research Practice Partnership that would effectively address these issues.

## 1.1   Research-Practice Partnerships

RPPs are long-term collaborations that—through a commitment to mutualism and intentional strategies fostering an equitable partnership—focus on problems of practice that can produce unique analyses (Coburn, Penuel & Geil, 2013) toward the improved use of research in decision making (Tseng, 2012) and educational outcomes (Fishman, Penuel, Allen, & Cheng, 2013). As such, our RPP builds on existing collaborations between California school districts (teachers, administrators, STEM ecosystem representatives, etc.) and CS education researchers, with a long history rooted in previous shared efforts with CSforCA.

Our partnership met regularly to identify issues impacting CS teachers and district leaders in real time, while discussing how data across regions could help address those issues. Through this partnership, we leverage local school data, elevate varied perspectives and experiences across different California settings toward advancing understandings about what works where, when, and under what conditions (Berwick, 2008; Coburn, et al., 2013) and center equity in CS education initiatives.

Our work takes a unique systemic approach to building teacher capacity and the equitable scaling and sustaining of CS education in California by addressing three interlocking levels of interventions–at the classroom, school/district, and state level. Building upon this RPP's founding members' experiences, we have learned that without school and district leadership support and long-term commitment to equity in CS education, investments in teacher preparation can be stymied.

We have also learned that as California creates and enacts a strategic implementation plan for CS education, it must be data-informed and intentional about equity-minded implementation; if not, these efforts may not only be short-lived, but they could have the unintended consequence of simply increasing opportunities for students who already have access to this knowledge, and perpetuate the exclusion of historically and systemically excluded students.

## 1.2   Our RPP Partners

This RPP builds upon many years of collaboration among five California LEAs, CS curriculum and PD providers, and researchers. The initial 5 school-based partners represent the diversity of California students and districts, and included District CS Coordinators, County CS Coordinators, and Instructional Services Specialists from Sacramento, Riverside, Los Angeles, Compton and San Francisco. Following year one, we recruited and mentored 9 additional LEAs who were new to CS implementation and included more rural regions. Following the racial uprising after George Floyd's murder during COVID summer of 2020, we made an intentional decision to recruit more school leaders of color, recognizing the impact and import of representation of our student demographics in California.

## 1.3   RPP Resource for Professional Learning: Summer of CS

One of the main outcomes of the RPP was the development of Summer of CS, a professional development Computer Science Professional Development (CSPD) Week modeled after the current

evidence-based all-comers national CSPD Week. A foundational premise of CSPD Week is that equity-based instructional practices are absolutely critical for broadening participation in computing (Goode, Flapan, Margolis, 2018). Building upon this approach, Summer of CS was structured for scaling and sustaining equitable computer science (CS) education for all students in California by providing professional learning opportunities for not just K12 teachers, but also school counselors, and school leaders/administrators. While the groups were disparate in role, they were united in the Summer of CS theme of broadening participation in computing and building synergy across the educational system. This model, created by the RPP, provides flexibility for regional adaptation and a how-to guide for local implementation. With equity as its core mission to provide CSforAll, Summer of CS includes:

- K12 teachers learn culturally responsive practices to engage underrepresented students with CS standards and common-core aligned engaging curriculum;

- School counselors reflect on disparities in CS and develop innovative strategies to encourage students and families to prioritize computer science in their schedules;

- School/district/county leaders examine local data to identify opportunity gaps and address common challenges such as teacher credentialing, support and long-term investment in CS for all students;

- Professional learning communities are created and sustained among diverse educational stakeholders to recognize the value of computer science for college and career readiness.

Analyses of post-PD feedback surveys found that: (a) teachers reported significant positive increases in CS knowledge and confidence using inquiry, teaching CS content, and equitable practices; (b) teachers' notions of equity in CS were deepened and expanded as a result of the PD; and (c) teachers found the networking between groups to be valuable.

## 1.4 RPP Resource: School Leadership Workshop and Equity Implementation Guide

As part of Summer of CS, the RPP also developed a workshop for school leaders, along with a companion CS Equity Implementation Guide. Throughout the course of the RPP, school leaders shared valuable problems of practice which were developed into mini-case studies that can be used to accompany the school leader workshop.

A critical component of these workshops is the commitment of administrators to gather CS education related data (number of courses in their schools, number of students, demographics of their students, pass rates etc.) from their own districts. This data helps ground administrators in the reality of their schools and the inequities that may exist. A main feature of the workshops is a data tool (https://csforca.org/the-data/) that uses statewide data from the California Department of Education. The workshops help guide administrators through reflection on the data and what it suggests to identify equity gaps in CS education in their schools.

## 1.5 Scaling and Sustaining the Work

One of the concerns expressed by our RPP founding partners was the sustainability of such a large and expensive professional development. As such, Summer of CS was intended to serve as a model and inspire districts to take what they learned and custom design and implement similar PDs at the local or regional level. It was our goal that after year one, districts would work together to develop an implementation model to be localized with a more sustainable cost-sharing structure.

Another concern was that a one week PD opportunity over the summer would not provide enough support to educators throughout the school year. The Summer of CS model then expanded to Seasons of CS, with workshops held in autumn, winter, and spring to provide educators with additional CS PD opportunities. Participating teachers were asked to bring letters of commitment from their school principals to offer CS, ensuring that CS was prioritized not just by the teacher, but supported by their organization, as well.

The results of the Seasons of CS model informed policy proposals to consider other funding mechanisms, such as public private partnerships or inclusion in the state budget to allocate funds for CS equity-focused PD programs. The research reported from this pilot served as a proof of concept for the Governor's budget to support $5M for the Seasons of CS Educator Workforce Investment Grant (EWIG) and a subsequent $15M EWIG grant to expand it further.

These innovative resources demonstrate the effectiveness of the SCALE RPP in furthering its goals. In what follows, we describe what we have learned about best practices for a healthy RPP through this shared effort. In particular, we will share details about our SCALE RPP approach and how this impacted RPP members and activities.

## 2   METHODOLOGY

This research used multiple data sources to generate conclusions about: 1) best practices for supporting healthy RPPs, as well as 2) how to understand the impacts of our work together.

For exploring best RPP practices that could immediately inform and improve how partners worked together, we drew on Networked Improvement Science methodology using a Plan-Do-Study-Act (PDSA) cycle (Bryk, 2009). This approach supports iterative development (Planning), testing (Doing/Studying), and implementation (Acting) of changes in activity that can lead to improvements. It requires having a vision of what one wants to achieve–in our case, ensuring that the partnership created space and support for equitable collaboration across different SCALE members and allowing all voices to be heard and respected in decision-making processes–as well as developing ways to monitor whether changes and activities along the way are helping one to achieve that vision. Toward such ends, we recorded meetings and collected meeting exit surveys, and annually surveyed and interviewed RPP partners to understand the value and impacts of our activities together on their professional and personal lives in what we called "Health of the RPP." These interviews and surveys were administered by an external evaluator (American Institutes for Research, AIR) to ensure that RPP partners could feel comfortable honestly conveying their perspectives and needs.

For understanding the impacts of our externally-facing activities (e.g., administrator resources, workshops, etc.), a series of surveys and interviews were conducted by AIR with both RPP partners and people using/experiencing the activities(see Flapan et al., 2020; Flapan et al., 2021).

## 3   RESULTS

The Research-Practice Partnership was named SCALE-CA: Supporting Computing Access, Leadership and Equity in California as a way to describe the purpose of our collaboration between researchers and practitioners and the co-creation of leadership tools, professional learning, and research to broaden participation in computing, especially among underrepresented students, including Black, Indigenous, and Latinx and low-income students.  As part of this partnership, we worked closely with an external evaluator to measure the "health" of our RPP, assessing the ways in which researchers and practitioners negotiated their relationships, biases, and priorities and expertise. By listening to the voices of both researcher and educator partners, we summarize our experiences and findings into five essential elements of a healthy RPP. These elements highlight RPP values and activities that others can use in their work to engage in robust research that has immediate and meaningful impacts on education practice.

SCALE is the same acronym we will use to describe the five elements of our healthy research-practice partnership which will be described in more detail below: 1) Shared Leadership, 2) Collaboration, 3) Application to Practice and Policy, 4) Learning is Ongoing, 5) Equity-Focused.

### 3.1   Shared Leadership

The RPP meets monthly online, and annually in person where the partners formed trusting relationships, collaborating, offering input on problems of practice, and engaging in ongoing learning and curricular pathway development. Through a shared leadership approach between researchers and practitioners, this RPP ensures that traditional hierarchies of power and privilege - in which researchers often conduct research *on* practitioner participants of a study, rather than *with* practitioner partners - are replaced with opportunities for co-construction of research questions, methodologies, and new knowledge for the field (Tseng, 2012).  Monthly meetings were facilitated by both researchers and practitioners, not elevating one expertise over another's, but rather, honoring the unique perspectives and experiences of both practitioners and researchers.

As these collective leadership practices and relationships deepened across the RPP, partnership members began to question whether or not the RPP itself reflected our commitment to equity.  As such, we focused on creating a shared definition of equity and how it was enacted as an RPP, as well as it's meaningful application in our outward facing resources and practices.

Motivated by a broader education movement to bring "CS for All" students, RPP members defined "equity" and "equitable" CS education and co-created a vision for how to make it a reality. This helped guide the group's focus via monthly online and in-person meetings, where education and research partners formed trusting relationships, challenged hierarchies of knowledge-building that historically prioritizes the ideas of academics over educators, shared decision-making power, offered input on common problems of practice, and engaged in ongoing learning and curricular pathway development that challenge the structures, systems, and policies that reproduce inequalities.

Informal feedback suggested that important voices of Brown and Black administrators and leadership from rural regions were missing from the RPP as well as the larger administrator landscape of the state in general. In a survey of members in spring 2021, 75 percent of respondents indicated a preference to expand membership to include more voices that have been historically and systemically underrepresented in CS. "I do think we should expand to be sure we're walking the walk with the equity piece," one member explained in a follow-up interview, "and making sure we have appropriate representation in the room." We collectively decided that it was worth trying to add new perspectives and voices to the RPP while simultaneously focusing on maintaining the supportive community of practice developed in the original group. In doing so, members advised we attend to group dynamics and foster the group's ongoing sense of community and trust by thoughtfully onboarding new members, ensuring commitment to the RPP, and fostering engagement among all participants. Individual outreach in the early stages of participation and an in-person convening that brought new and existing members of the RPP together were among the steps employed to do so.

## 3.2   Collaboration

In addition to a process of shared leadership, the RPP created the conditions for both researchers and practitioners to harness their expertise and experience toward shared goals through collaboration.  One such collaborative effort involved the development of the CS Equity guide and it's accompanying workshop for school leaders. To develop the CS Equity Workshop for School Leaders, a subgroup of the RPP met weekly for two months and used experiences from previous workshops and the feedback from the CS Equity Guide. The first workshop took place during the first Summer of CS in 2019, and had been repeated more than a dozen times since across the state and nationally. Practitioner partners from the RPP have taken the lead in facilitating the workshop, dividing up different sections based on their skill-set and experience. After every workshop, the team takes part in a debriefing, reviewing the feedback from participants and considering which elements they felt needed strengthening and which were effective.

The main development of the CS Equity Guide initially centered on the experiences of two early-adopter administrators who had pushed to implement CS more fully in their districts. In order to build on their experiences, researchers interviewed administrators from other districts and counties throughout the state, asking them:

- What would you have wanted to know about CS implementation before you were tasked with this role?

- What were your priorities and challenges in the first 6 months of implementation?

- What is most important for a new district leader to know about implementing high- quality CS?

- What are the issues that district leaders need to pay attention to in terms of equity in CS education?

- What resources do you use when you have questions about CS implementation?

Researchers and district leaders grouped the content into categories and produced a downloadable guide in PDF format, as well as a printed version, that incorporated links to resources and quotes from administrators that provided detail about specific situations.

Utilizing a PDSA cycle, researchers then interviewed district administrators and other leaders of California's CS education community for feedback about the CS Equity Guide. These responses were then grouped thematically. The feedback from these leaders was then shared with the RPP and they used it to develop a more comprehensive second version of the guide, which had more content for elementary and rural schools, and had more of a focus on issues of equity. Chapters of the guide include Developing Pathways; Students and Recruitment; In the Classroom; Preparing and Supporting Teachers; Funding; Family, Community, and Industry; and Out-of-School Learning. To date, there have been 894 copies of the CS Equity Guide downloaded and more than 3,000 printed copies distributed.

One piece of feedback that was not immediately addressed in the second version of the CS Equity Guide (because it would delay its release) was the desire educators had for real-life examples of CS implementation in a district. To address this, researchers asked partners to briefly describe how they addressed one of the chapters in the guide. Researchers then developed a protocol and interviewed partners about a specific area which they addressed equity in CS education (e.g. developing teacher support, community engagement, or a district-wide resolution). Researchers then created short sections that illustrated the context in which they worked, how they addressed their challenges, and how their solution creates more equitable environments in their educational organizations. In addition, researchers developed discussion questions that facilitators could use to help participants reflect on the case studies more deeply and to make our resources more directly applicable to educators in the field.

## 3.3   Application to Practice and Policy

Our RPP used PDSA cycles for continuous improvement practices focused on equity to encourage reflection on how our community of leaders was running administrator workshops for other leaders across the nation. The partners made explicit efforts to invite Black, Brown, and women leaders to help run workshops that shifted the ways they talked about equity with other administrators and leaders and how this work can show up in daily practice.

Individual leadership practices that shifted through these continuous PDSA improvement cycles across the RPP related to ways that partners were thinking about equitable participation in their local contexts. As one member shared, "I think it's really reinforced the idea of equity.…Equity is not the frosting on the cake, but it's really baked into the cake.…It's caused me to delve deeply into the idea of equity and thinking about systems and what we can do to have more equity within our system." Indeed, all survey respondents agreed that the RPP had helped them to lead CS more equitably within their LEA, with 61% strongly agreeing. In meeting discussions, leaders reported looking at data differently, parsing out various lines of students' intersectional identity to reflect on who had the most privilege in their regions and access to best teachers or resources in computing education. These discussions also surfaced leaders' discomfort with the tension between the shifting political landscape and their equity priorities. Others indicated in interviews that they questioned the power they had as leaders to make impactful decisions in their school contexts.

The RPP's success at the school district level has provided evidence-based pilot programs that have shaped policy at the statewide level.  The experiences outlined in this RPP led to UCLA being awarded a major grant from the California Department of Education, expanding SCALE's work to build the capacity of "CS Champions," across the 7 regions of the California Statewide System of Support. The practical application of programs served as a proof-of-concept that was later translate into funding and policy proposals that would scale and sustain these equitable practices designed by the RPP.

### 3.3.1   Informing Policy Briefs

In addition to influencing statewide budget planning for professional learning, the RPP works to inform key decision makers in high levels of government such as the legislature, as well as education leaders at the California Department of Education who are tasked with making defining decisions about statewide support for CS. As such, our RPP works together to craft messages and research findings to help educate about the deeper equity issues related to CS expansion efforts. In order to build their capacity to make evidence-based decisions about broadening participation in computing, our RPP collaboratively writes data-driven research and policy briefs to share with policymakers around the state.

Each policy brief is accompanied by a webinar or other meeting designed for dialogue among the stakeholders–teachers, counselors, administrators, and policy makers. These events engage practitioners, researchers, and policymakers in an authentic dialogue about what is working and what is missing in our efforts to broaden participation in computing. Policy and research briefs, as well as opeds in newspapers,  focus on translating complex topics into easily understandable and accessible research regarding equity-related issues such as teacher credentialing, teacher preparation programs, what is equity minded curriculum and pedagogy, tension between CTE or college preparation, etc.

Our external evaluator, AIR, prepared a research report on the impact of these policy briefs and the ways that key decisionmakers value the input from local practitioners. Through surveys and interviews, we have learned the impact these materials have had on increasing public's understanding broadening participation in computing in CA. In this way, our RPP ensures direct impacts of research on practice and policy.

## 3.4  Learning is On-Going

In order to successfully establish continuous improvement efforts, we sough clear, measurable, and achievable goals. Our RPP employed approaches consistent with Plan, Do, Study, Act cycles as a means of embracing continuous learning. To Plan the steps, members studied how education leaders problematize the underrepresentation of young women and people of color in computer science education and what interventions can be implemented. These were based on reviews of research, personal accounts of RPP members and their experiences in the field, and evidence collected at various stages of the RPP's work. One key aspect of this work was a collective process to define "equity" and consider ways to center equity in our work together. Through its Do stages, the group developed resources and experiences designed to foster equitable leadership; examples included the creation of an Equity Guide and Workshop for Administrators. In the Study stages, members of the RPP collected data through surveys, interviews, and anecdotal experiences to gauge the success of these interventions. The insights generated through these data sources informed the Act stages of the RPP's work, in which our partnership of researchers and leadership made ongoing adjustments, specifically focusing on equity in CS education and leadership.

A key part of our RPP's health is ensuring that all members were learning together in a community of practices in ways that supported deeper conversations about equity, our collective work, and new related efforts in the field. These learning events also respected all members as valued and knowledgeable partners who could learn together as well as share from their own experiences in different locations. To support ongoing and collective learning, our RPP invited external experts as speakers to RPP meetings, as well as invited RPP SCALE partners to present about specific perspectives, activities, and events they had to share with the wider community.

For example, recognizing that administrator and leadership partners needed to make important decisions about the types of curricula and professional developments for teachers that they endorsed in their local districts, we invited David Weintrop to share about his team's Teacher Accessibility, Equity, and Content (TEC) Rubric designed for helping educators and leadership identify whether or not the tools they are using support meaningful CS learning for diverse students (Weintrop et al., 2019; Weintrop et al., 2020). At the start of the pandemic and following the murder of George Floyd and Breonna Taylor, Tonikiaa Orange shared about the important equity issues school leaders and educators must consider regarding the needs and experiences of students of color, and specifically African American students. Orange is the Director of the Principal Leadership Institute and Culture and Equity Project at UCLA Center X, and an author of the book *All Students Must Thrive* (Howard et al., 2019). In response to SCALE members' interest in meeting the needs of indigenous students and using computer science for anticolonial community uplift, we invited guest speakers Cueponcaxochitl Moreno and Joseph Caroll-Miranda to share about their work in critical ancestral computing (López-Quiñones et al., 2023).

RPP partners were regularly invited to share about relevant and timely topics to respond to the issues of the day. For example, RPP partners took turns each month sharing a local problem of practice. In a fishbowl activity akin to a more formalized consultancy practice among peers, one school leader would share their problem and everyone would reflect and guide potential solutions. This helped foster a true community of practice where these presentations led to sharing of expertise and experience across the state of California, as well as ideas for best practices that partners could employ in their own contexts.

Finally, to ensure that learning was truly "ongoing" for our RPP, we regularly collected data regarding the administrator toolkit and workshop through PDSA cycles of iterative improvement in a Continuous Improvement approach. Following each implementation of the toolkit and workshop within the districts, we collected survey and interview data regarding the impacts of the toolkit and workshop on administrator perspectives of broadening participation in computing, and commitments to CS in their regions. Examples of interview or survey questions include: With all of the course requirements a student must have, why do you think CS is important or not? What are your greatest challenges to implementing CS for all students? What do you believe are the supports that teachers need to help broaden participation in computing?

## 3.5  Equity-Focused

Initial findings suggest that employing continuous Improvement methods focused specifically on advancing equitable leadership practices through a shared operational definition of equity had an impact on leadership practices and the larger RPP. More specifically, creating a shared definition of equity through an iterative process of reflecting on key equity issues throughout the past three years of a rapidly changing sociopolitical climate helped illuminate the importance of elevating a greater diversity of voices,

experience, and understandings of equity both within the RPP and in the partnership's statewide efforts. This process began by inviting all partners to individually define equity across research and practice perspectives, then discussing their ideas with one another, and then amalgamating them into one definition. However, experiences like the COVID pandemic, the murder of George Floyd, and the January 6th Insurrection highlighted the ongoing need for reflection and discussion about what equity entails. A subcommittee of group members solicited feedback on the original definition from the entire group and then redeveloped the definition in an effort to address the feedback. Rich conversations ensued that supported self-reflection on leadership practices both collectively and individually throughout the life of our RPP.

## 4   CONCLUSIONS

This paper describes the efforts of a research-practice partnership across the state of California that brought together LEA leaders with educational researchers to focus on data collection and analysis that can directly impact practice and policy. The key RPP practices that most positively impacted our collective work–SCALE: Shared Leadership, Collaboration, Application to Practice, Learning is Ongoing, and Equity-Focused–proved particularly significant for not only the broader impacts of our partnership, but also the individual growth of partners within the RPP. While there is considerable overlap between the five elements of a healthy research practice partnership, it is important to note that the RPP did not always meet the needs of every partner, all the time. Through the trust that was created and the cultivation of a reflective community of practice, we discussed problems as they arose, misunderstandings, and competing priorities. As an ongoing community of practice, it was challenging to onboard new staff when trust had already been built from the initial RPP.  As teacher and staff turnover continue to be a challenge for educational organizations, it remains an area of need for further research and insights on how best to mitigate both staff changes and changing educational priorities. As we work toward scaling and sustaining equitable CS, we are mindful of the need to continue to fund our partners equitably, and recognize the many hats they wear as school leaders. The research practice partnership has given us both windows to see beyond our own contexts, and a mirror with which to reflect on our own equitable practices in order to broaden participation in computing in our local contexts and how to scale that learning across the state.

## ACKNOWLEDGEMENTS [ARIAL, 12-POINT, BOLD, LEFT ALIGNMENT]

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