AERA 2023 Proposal

Title: Continuous Improvement to Operationalize Equity in a Research-Practice- Partnership with Computer Science Education Leaders

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Abstract:
This study explores how a research-practice partnership's (RPP) continuous improvement methods influenced equity leadership practices in computer science education for school administrators. District leaders and researchers analyzed and documented their continuous improvement process to define "equity and the iterative process of developing this shared definition. Findings reveal this process operationalized equity on two levels: 1) An external examination of equity in education and how racism and biases exacerbate access to computer science education, and 2) An internal gaze on the lack of diversity among our RPP. Key to each of these findings is the collective focus on an ever-changing definition of equity that encouraged our RPP to see our agency as school leaders in disrupting inequality and enacting change.

Proposal:
Objectives & Purpose
 Funding agencies, including the National Science Foundation, encourage research-practice partnerships (RPPs) to close learning opportunity gaps, specifically among those underrepresented in computer science (CS) (Esiason, Zarch, Sexton & Peterfreund, 2020). This research builds on literature recognizing that researcher and educator collaborations can yield accurate and relevant research results to inform teaching/leadership practice (Coburn, et al., 2013; Penuel, et al., 2015). Our RPP brings together researchers and administrators from 17 local education agencies (LEAs) across California to collaboratively build school leadership capacity to implement and sustain equitable K-12 CS education. The RPP built on participants' collective experiences, perspectives, and equity goals to create professional learning resources such as an administrator Equity Guide and workshop.
 Building leadership capacity to promote equity and access in CS education, led us to question, "What does 'equity' mean and who decides that?" In alignment with AERA 2023's theme, we explored how our leadership group remains faithful to our shared equity definition, ensuring that the truth of its meaning guides collective directions and actions. Furthermore, we embedded this definition into a commitment to continuous improvement through ongoing reflection within the RPP.
 This paper explores the continuous improvement process of defining equity and using it as a guiding principle for leadership and developing equity tools, by exploring how we: 1) collaboratively defined equity with school leaders, 2) centered that equity definition in all aspects of the RPP, and 3) built greater diversity of the RPP's membership despite the risk of changing well-established dynamics of the RPP's membership. We answer the following research questions:

- How can an RPP's approach to continuous improvement advance equity leadership practices with school leaders bringing computer science into their schools?
    - How can diverse voices, experiences, and understandings of equity be elevated in a research practice partnership?
    - How does the process of creating a shared definition of equity operationalize an RPP of school leaders' commitment to equity in CS education?

Perspectives/Theoretical Framework

Continuous improvement is an approach to solving problems by systematically learning from past experiences to refine strategies and create better outcomes (Best & Dunlap, 2014; Park, Hironaka, Carver & Nordstrum, 2013). In the education system, continuous improvement helps improve a school, district, or organization's commitment to quality and the outcomes it achieves. For example, educators can utilize continuous improvement approaches by using accurate data to inform them about best teaching practices, or school district employees can improve their operations management efforts to increase efficiency. Public schools that have implemented a continuous improvement approach have higher homework completion rates, Advanced Placement (AP) test participation, kindergarten readiness, college enrollment, and utilize funds more efficiently (Best & Dunlap, 2014).

In order to successfully establish continuous improvement efforts, it is important to have clear, measurable, and achievable goals. Our RPP employed approaches consistent with Plan, Do, Study, Act cycles as a means of embracing continuous improvement. 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.
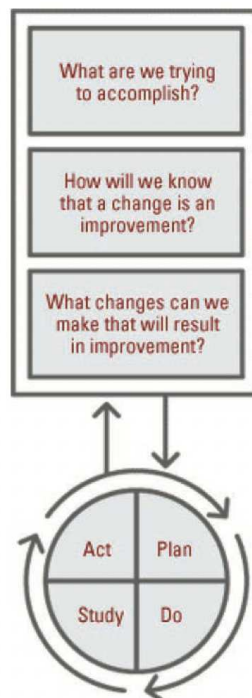

Fig. 1: Plan, Do, Study, Act Model (Park, Hironaka, Carver & Nordstrum, 2013)

A comprehensive continuous improvement approach in school districts is important if educators and organizations want to improve student outcomes. Inspired by a commitment to

equity and expanding opportunities, continuous improvement guided our partnership among researchers, and school, district, and county, administrators.

When equity is operationalized intentionally in an RPP, both practitioners and researchers can feel that their input and interests are valued (Ryoo, Choi, & McLeod, 2015; Sexton & Zarch, 2020; Denner, Bean, Campe, Martinez, & Torres, 2019). Santo, Ching, Peppler, and Hoadley (2017) have documented how an equity-minded approach of an RPP's architecture can produce "participatory knowledge building," in which the joint development of artifacts, as well as shared language and orientation toward knowledge-building can elevate practitioner experience. Our RPP sought to support this participatory knowledge building by collectively defining and redefining shared notions of "equity" with school leaders, recognizing that when words are deprived of "action," they become "idle chatter," and likewise when words lack "reflection," they lose their "commitment to transformation" (Freire, 1972, p. 68). This approach was further informed by Ishimaru and Galloway's (2014) framework for Equitable Leadership Practice that emphasizes how in order to "lead for equity," administrators must explore notions of equity by examining their own selves, values, biases, and assumptions that influence their leadership practice (p. 118). This commitment to inward reflection is necessary for leaders seeking to raise consciousness in their communities (Ishimaru & Galloway; 2014). Through this process, our RPP reconsidered our notions of leadership and expanded participation among leaders of color within our community of practice while seeking to expand these opportunities among students of color in CS classrooms.

Methods & Data Sources

This research used multiple data sources to generate conclusions about the intersection of equity and continuous improvement within the RPP. For externally-facing products and activities (Research Question 1), a series of surveys and interviews about products and events developed through the RPP provide insight into the centrality of equity in those efforts. The authors' reflections about ways in which these findings contributed to a process of continuous improvement within the RPP supplement these pieces of evidence.

Additional data sources informed how our RPP embedded equity into their interactions and approaches to leadership. These include recordings of meetings, transcripts, surveys, and Google Docs that document efforts to develop an equity statement for the RPP. Meetings that included the entire RPP and those that included only the members of the Equity Statement Subcommittee were recorded, and then transcribed by Otter.ai or Zoom transcription. Partners completed various surveys about their personal definition of equity, or that of their organization, as well as surveys on their thoughts of the equity statements throughout their various iterations. Version histories and comments on various copies of Google Docs on which the equity statement was workshopped are also analyzed. In addition, survey and interview data from RPP members about their experiences with the group offer insights into its attention to diversity, equity, and inclusion–including survey and interview data that informed decisions to expand membership midway through the life of the RPP. Finally, annual surveys and interviews collected insights from members of the RPP about their experiences and suggestions for future improvement.

Results

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 discussed their ideas with one another and then amalgamate 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.

Regarding collective leadership practice across the RPP, partnership members began to question whether or not the RPP itself reflected the ideas described in the evolving equity definition. 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. Then, 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 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, member 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.

Continuous improvement practices focused on equity in the RPP also encouraged 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.

Individual leadership practices that shifted through these continuous improvement cycles across the RPP related to ways that partners were thinking about equitable participation in 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.

Scholarly Significance

Developing a definition of equity together and iteratively improving that definition to match the ever-changing times supported the development of a shared understanding about the RPPs larger goals and need to center equity in the RPP's day-to-day practices. Findings encourage other RPPs to collaboratively develop their definition of equity, to plan priorities based on that definition, and repeatedly "check in" with that definition throughout the designing of artifacts and interventions. Continuous improvement cycles geared toward ensuring that an RPP remains true to its guiding compass - in this case, a shared definition of "equity" that

evolved over time - proved valuable to the work and focus of the RPP. Ishimaru and Galloway (2014) point out that a driver of equitable leadership practice is tightly connected to the processes of inquiry and continuous improvement, and that this inquiry begins within the individual leader becoming aware of their own biases and understanding of power, privilege, and oppression and extending this inquiry to their own institutions.

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