CS Equity Case Study:

Engaging Families & Communities to Support Computer Science

By: Steve Kong, Jessie Gurbada, Roxana Hadad, Jean Ryoo, & Julie Flapan (May 2023)

The RUSD Team:
Steve Kong, *Director for Curriculum & Instruction*
Jessie Gurbada, *High School Science Teacher and previously worked as a Staff Development Specialist for RUSD*

Riverside Unified School District (RUSD) is the 16th largest school district in California, part of the rapidly growing Inland Empire, a large metrsopolitan area and region in Southern California. RUSD educates nearly 42,000 students across 50 schools in Riverside, Highgrove, and Woodcrest. RUSD is 67.2% Hispanic or Latino, 17.9% White, 6.1% African American, and 3.6% Asian. This case study explores RUSD efforts to increase student engagement in computer science education by tapping into the value of parents, families, and external educational partners, typically not involved in CS. In its efforts to broaden participation in computing, RUSD has forged an explicit strategy to target students and families who have been underrepresented in CS. Through this engagement, they are better able to respond to equity issues that may arise when providing CS programs. This case study can inform educators on the importance of including parents and caregivers in conversations around CS to increase participation and engagement in CS education.

Why Engage Families in CS?

Getting all schools to teach computer science while ensuring students are engaged in it takes time, effort, and concerted strategies. Recognizing the urgency with which youth must learn computer science, RUSD prioritized informing families, parents, and caregivers about opportunities for youth, both within school and out-of-school time. RUSD developed family webinars to inform the largest number of families possible about a range of activities available in the district. RUSD specifically seeks to reach families who have been traditionally marginalized from computing education opportunities, including African American/Black and Latino/a/x community members.

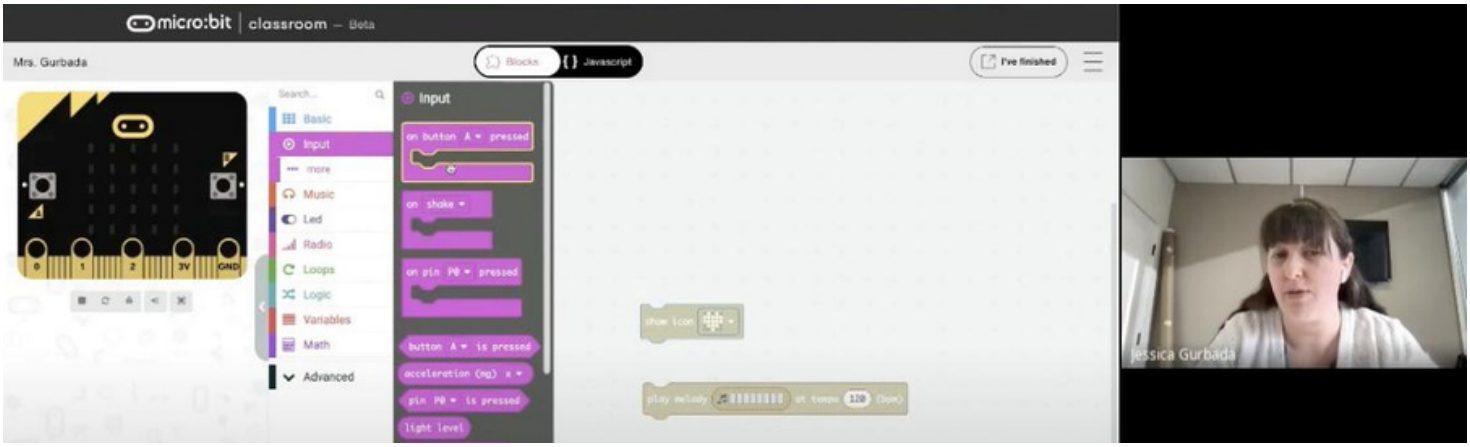

Photo Courtesy of RUSD

Family Webinars

Family Webinars are virtual events for parents, caretakers, and youth to learn about computer science, why it is important for all students to learn, and how to access computer science educational opportunities both in and out-of-school. While these events range from family code nights to virtual coding clubs, they usually begin with informational webinars to generate interest among stakeholders, share key issues relevant to why computing education is important, and provide participants with a hands-on activity or experience to engage with computing from the comfort of their own homes, in a virtual format. Families are invited to engage in conversation as a family, talk about potential areas of study and careers, coding at home opportunities like Hour of Code, along with a Q&A with current and recently graduated college students. Family Webinars end with information about upcoming virtual code clubs, after school events, summer events, and field trips that youth can access in RUSD. Families get the most up to date information at bit.ly/rusdstem.

While these events used to be held in-person before the COVID pandemic, RUSD developed online engagement opportunities that are more accessible. To address issues of equity and access, the RUSD team specifically reaches out to groups who have not had prior access to computing education through the District African American Parent Advisory Committee (DAPAC) and English Language Advisory Council.

Youth-Facing Efforts

RUSD collaborates with community/family members to provide youth-facing computing activities, that inspire students to take advantage of increased CS course offerings. These youth activities include:

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- **Inspire Her Mind** - A two-day conference for RUSD girls to get them thinking about careers in STEM, Inspire Her Mind features women from local industry partners and universities, as well as hands-on STEM workshops.

- **GenCyber** - Supported by the National Security Agency and the National Science Foundation, this program provides cybersecurity experiences for RUSD girls and teachers at the secondary level. RUSD partners with Girl Scouts and Cal State San Bernardino University to run these events.

- **Data Science Academy** - In collaboration with UC Riverside, middle and high school students take part in “Data Science for Social Good,” where they collect and analyze data from their own communities.

- **Robotics Camp** - La Sierra University faculty members and interns deliver lectures and guided lab exercises on topics such as basic electronics, computer programming language, and the use of open-source electronic hardware and software. By the end of the week, students assemble and program functional smart robotic cars operated by Arduino microcontrollers and ultrasonic sensors.

Why offer Youth-Facing Activities?

These events offer alternative entry points to computer science for students who might not encounter CS during the school day. They also provided a space for students to explore what they might be interested in without the pressure of a score or grade. For instance, one student from a continuation school attended Inspire Her Mind, participated in a session on robotics, signed up for a summer robotics program, and then started the first robotics program at her school. These youth-facing activities can inspire youth agency and engagement with computing in your schools.

Recruitment and Marketing Strategies

These activities were virtual during the pandemic, but are usually in-person events. They are offered by The Department of Innovation and Learner Engagement at RUSD, often in partnership with the group hosting the event. The RUSD team manages the bulk of the logistics, outreach, and communication seeing these opportunities as true partnerships. Activities are funded through LCAP and local donors. To ensure that more parents – and especially those who have been more marginalized from computing education – are receiving information about family webinars and youth learning opportunities, they market their virtual programs in several different ways. The RUSD Digital Learning team:

- Sends flyers digitally to all school sites who can then physically post them as well as email them to parents/students;
- Shares information on district social media;
- Works with the RUSD communications team to plaster announcements on websites, including their STEM family website;
- Calls and text message families, and especially African American/Black and Latino/a/x parents through RUSD parent organizations;
- Sends information to teachers through weekly elementary teacher newsletters and secondary core content leads to share with their students; and
- Asks principals to share information about events in their school newsletters.

Building Relationships with University/Industry Collaborators to Leverage Community Partnerships

- RUSD relies heavily on university and local industry partners like UC Riverside, La Sierra University, California Baptist University, and Bourns Incorporated for their expertise, as well as funding resources.
- UC Riverside's Computer Science Department developed the Data Science Academy, Scratch camp, and a Python game design camp, and Cal Baptist's engineering team helped write lessons for micro:bits.
- Bourns provided funding for LEGO kits, and after a successful pilot, provided more funding to scale the project for more students.

Photo Courtesy of RUSD

Room for Growth

Online survey responses suggest that youth enjoy learning during these virtual gatherings, though RUSD would like to better understand and evaluate youth engagement. It's unclear to what degree youth attendees are engaging with the webinars because they often have their cameras off during online gatherings and offer limited feedback to the facilitators and one another.

Gurbada and Kong strive to improve parent/caretaker attendance and ensure a positive learning experience for families. They consider different pedagogical strategies, communicating with families who speak languages other than English and Spanish, and how best to follow-up with families after virtual events. To support improvement, they actively meet with parent groups to hear their feedback.

Key Equity Considerations

- **Special Populations**: For youth-facing events, there was a concerted effort to maintain an equal gender distribution among participants of out-school-time programs and ensure that at least 60 percent of the participants were from RUSD's historically excluded populations. Most importantly, these extended learning opportunities came at no cost to any student.

- **Economic Mobility**: The RUSD team believes in the power of economic mobility that CS can offer their youth. Because CS helps build the technical skills and the creativity necessary for effective problem solving, it can lead to opportunities to advance in the field.

- **Parent Engagement**: RUSD communicates directly with parent groups of underrepresented students, e.g., African American Parent Advisory Council and English Language Advisory Council.

- **Equity**: RUSD Department of Innovation and Learner Engagement focused recruitment on two high schools that had the highest population of English language learners and the highest population of students on free and reduced lunch.

- **Access**: RUSD provided transportation for students weekly.

Discussion Questions

1. What might effective student and family engagement look like given what you've learned through this case study?
2. Are there existing or prospective community partners you might leverage to expand access to computer science in your context?
3. How might you connect out-of-school experiences with in-class interest and engagement?
4. What are the best ways to communicate and engage with families in your community?
5. What are the barriers that need to be addressed to engage families in your CS learning?
6. What are the key equity considerations listed in this case study that align with your LEA's values and goals?
7. What equity considerations are missing here that you would want to focus on in your own work with families/communities?
8. What University partnerships can you build on for CS in your region?
9. Are there strong parent groups and organizations in your region that you can call on for partnership?
10. What are the student demographics in your region and how might you reach out to a variety of families with different languages and cultures to make CS relevant in your community?