



A Researcher Practitioner Partnership(RPP): The CS Teaching and Learning Collaboratory (CS-TLC)



#RUCSReady

CINDY BLITZ, VIVIAN ALLEN, & DAVID AMIEL

CENTER FOR EFFECTIVE SCHOOL PRACTICES
GRADUATE SCHOOL OF EDUCATION
RUTGERS UNIVERSITY | NEW BRUNSWICK

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- How can we set up a collaborative structure to be effective and efficient with the ability to meet the needs of diverse members?
- How can this organizing mechanism contribute to improvements in CS teaching and learning?
- What are the essential components of successful partnerships to support teachers, admins, and schools/districts with CS?
- Why are partnerships essential to more effective teachers and principals?
- What knowledge and experience do we already have in this area (IHE- LEA) partnership?
- What practices are we already using that would have greater impact if we improved them?
- What supports would we need in place in order to do so?
- What do we need to understand to work at a deeper level to increase teacher knowledge and practice?

EMBRACE MEANINGFUL CONNECTIONS BETWEEN AND AMONG SCHOOLS, DISTRICTS, HIGHER ED, & OTHER STAKEHOLDER PARTNERS TO STRENGTHEN CS TEACHING AND LEARNING

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SESSION FOCUS

RPPs (and similar collaborative structures) – strategies to engage diverse community of educators around shared goal

CS RPP (CS-TLC) – experiences, successes, lessons learned, and project impact



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@AmielBlitzAllen
imr.edu.com/ny/cs4all



NORMS FOR COLLABORATION

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Computer Science Teaching and Learning Collaboratory (CS-TLC): Connecting CS Educators for Equity and Engagement

Cynthia L. Blitz, PhD¹, Francis P. Trees, DPh² and Thu D. Nguyen, PhD²
¹ Center for Effective School Practices, Graduate School of Education
² Department of Computer Science

PROJECT GOALS

GOAL 1 Address equity challenges in an RPP focused on increasing participation in and equity of CS education.

GOAL 2 Develop and deliver high-quality CS PD and ongoing support for teachers to enable them to deliver rigorous courses at their high schools in ways that value their undergraduate academic abilities, institutional and cultural backgrounds.

GOAL 3 Invest in the capacity of high school and district leaders to plan, implement, manage, and evaluate programs and practices that can support rigor and equity in CS education.

GOAL 4 Address inequity challenges in an RPP focused on increasing participation in and equity of CS education.

OVERVIEW

This NSF-funded project builds the capacity of an established research-practice partnership (RPP) to address equity in CS education for underserved students.

The Computer Science Teaching and Learning Collaboratory (CS-TLC) is intended to promote and support key mechanisms and processes of effective collaborations to address equity challenges in schools and districts by utilizing rapid, iterative, and context-expanding research cycles.



RESEARCH PLAN

1. Assess the degree to which the RPP is achieving its goals. Evaluate the growth of the RPP over time and how it may increase or decrease the equity of the RPP in achieving its goals.
2. Track improvements in teacher content and pedagogical CS knowledge.
3. Record any indicators of systemic change either directly and indirectly that occurred as a result of underserved participation in CS, U.S. K-12 settings.
4. Measure ways change in student academic performance, institutional, and other indicators.
5. Evaluate the relative effectiveness of CS and cultural efforts and support concerning teacher preparation for different groups of students and for different types of schools and districts.

CS-TLC brings together:

1. CS educators and researchers from a large public research university and a teaching university
2. Teachers and administrators from 10 diverse urban districts in the U.S.
3. Content experts, 14 partners, community members, and industry organizations

PARTICIPANTS

Contact Information: jml@imr.edu.com, 732-932-0300, 732-932-0300



THE PROMISE OF PARTNERSHIPS

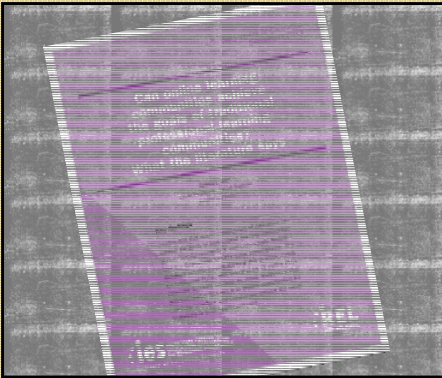
By Gail K. Meister and Cynthia L. Blitz

one of the valuable learning that practicing educators gain often have to do their jobs better comes neither from institutionally designed professional learning nor solely on-the-job experience and reflection. An equally effective or more impactful of education. Through professional learning and research-practice partnerships that the goals of improving student learning and ultimately increasing achievement and one have a number of factors to consider, they skills to one have designed professional learning focus on enhancing educator practices, making

EDUCATORS AND RESEARCHER PARTNERSHIPS

Meister, G. & Blitz, C.L. (2016). The Promise of Partnerships: Researchers Join Forces with Educators to Solve Problems of Practice of Partnerships. Learning Forward, June Edition.

<https://learningforward.org/docs/default-source/jed-june-2016/the-promise-of-partnerships-june16.pdf>



ONLINE, HYBRID PROFESSIONAL LEARNING COMMUNITIES

Blitz, C. L. (2013). Can online learning communities achieve the goals of traditional professional learning communities? What the literature says. (REL 2013-003). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Mid-Atlantic. Retrieved from <http://ies.ed.gov/ncee/edlabs>.



COMMIT, TRANSFORM, INFLUENCE

CS Teaching and Learning Collaboratory (CS-TLC)
S/2/m
<https://www.powtoon.com/c/1Cs8gtOCNe>

PARTNERSHIPS AND COLLABORATIONS

What is an RPP?

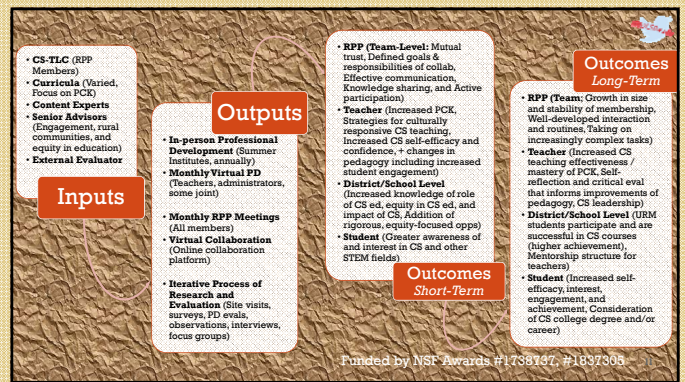
- Authentic long-term collaboration between LEAs, IHEs, and other partners
- Identify problem of practice (PoP) to study
- Conduct rigorous research to inform action
- LEAs determine how to apply findings for solving PoPs
- Build capacity of all RPP members by learning from each other

What is a PLC?

- Structure is meaningful
- Sustained inquiry that is cyclical
- Educators join together to solve common problems of practice
- Setting shared goals
- Shared personal practices

RPP Functions as PLC

- Working on common problem of practice
- Sharing personal practices
- Reduce isolation
- Collegial practices
- Support partner practice organizations in achieving goals
- Produce knowledge that informs ed efforts broadly



Inputs

- CS-TLC (RPP Members)
- Curricula (Varied, Focus on PCK)
- Content Experts
- Senior Advisors (Engagement, rural communities, and equity in education)
- External Evaluator

Outputs

- In-person Professional Development (Summer Institutes, annually)
- Monthly Virtual PD (Teachers, administrators, some joint)
- Monthly RPP Meetings (All members)
- Virtual Collaboration (Online collaboration platform)
- Iterative Process of Research and Evaluation (Site visits, surveys, PD evals, observations, interviews, focus groups)

Outcomes

- Short-Term**
 - RPP (Team-Level): Mutual trust, Defined goals & responsibilities of collabor, Effective communication, Knowledge sharing, and Active participation
 - Teacher (Increased PCK, Strategies for culturally responsive CS teaching, Increased CS self-efficacy and confidence, + changes in pedagogy including increased student engagement)
 - District/School Level (Increased knowledge of role of CS ed, equity in CS ed, and impact of CS, Addition of rigorous, equity-focused opps)
 - Student (Greater awareness of and interest in CS and other STEM fields)
- Long-Term**
 - RPP (Team): Growth in size and stability of membership, Well-developed interaction and routines, Taking on increasingly complex tasks)
 - Teacher (Increased CS teaching effectiveness / mastery of PCK, Self-reflection and critical eval that informs improvements of pedagogy, CS leadership)
 - District/School Level (URM students participate and are successful in CS courses (higher achievement), Membership structure for teachers)
 - Student (Increased self-efficacy, interest, engagement, and achievement, Consideration of CS college degree and/or career)

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PARTNERSHIPS AND COLLABORATIONS

Low Intensity

- Communities of Practice
- Study Councils
- Professional Learning Communities

Medium Intensity

- Research Alliances
- Researcher-Practitioner Partnerships
- Professional Learning Communities

High-Intensity

- Design Research
- Networked Improvement Communities

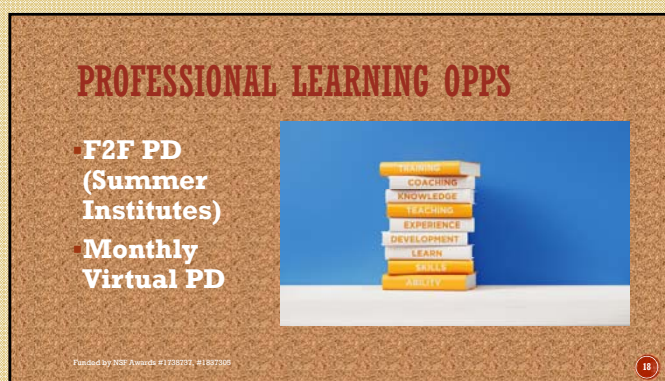
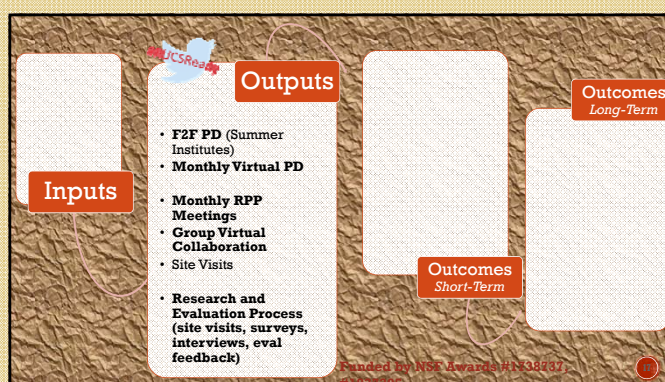
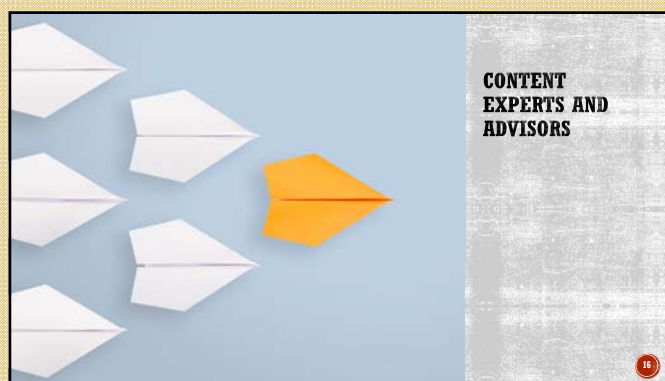
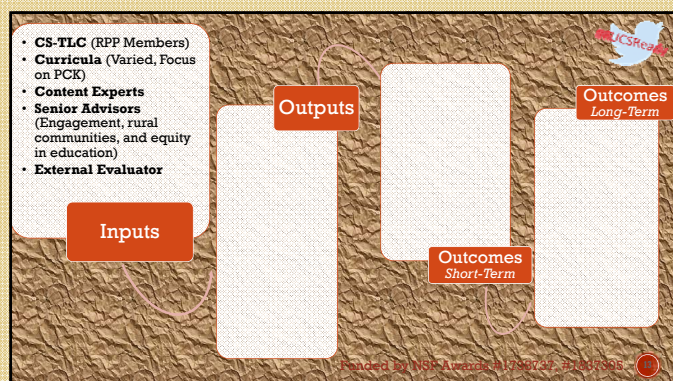
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LESSONS LEARNED



We do not learn from experience, we learn from reflecting on experience
-John Dewey

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@cindyblitzphd
in.education/cindyblitz



COLLABORATION

Monthly RPP Meetings
Group Virtual Collaboration

"EVERYONE YOU WILL EVER MEET KNOWS SOMETHING YOU DON'T."
-BILL NYE-

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Inputs

- RPP (Team-Level)
- Mutual trust,
- Defined goals & responsibilities of collaboration
- Effective communication
- Knowledge sharing, and Active participation

Outputs

- RPP (Team-Level)
- Growth in size and stability of membership
- Well-developed interaction and routines
- Taking on increasingly complex tasks

Outcomes
Long-Term

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RESEARCH AND EVALUATION

Research and Evaluation Process (site visits, surveys, interviews, eval feedback)
Iterative and capacity building

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RPP/TEAM-LEVEL MEASURES AND OUTCOMES

Resources

- National Network of Education Research-Practice Partnerships (NNERPP), resources on assessment http://nnerpp.rice.edu/kc_effectiveness/
- Henrick, E.C., Cobb, P., Peniel, W.R., Jackson, K., & Clark, T. (2017). *Assessing Research-Practice Partnerships: Five Dimensions of Effectiveness*. New York, NY: William T. Grant Foundation. <http://wgrantfoundation.org/library/uploads/2017/10/Assessing-Research-Practice-Partnerships.pdf>
- Blitz, C.L. & Schulman, R. (2016). *Measurement Instruments for Assessing the Performance of Professional Learning Communities (PLCs)* (REL 2016-144). Washington, DC: U.S. Department of Education, Institute of Education Sciences, Regional Educational Laboratory Mid-Atlantic. <https://ies.ed.gov/ncee/edlabs/projects/project.asp?projectID=444>

Short

- Mutual trust
- Defined goals & responsibilities of collaboration
- Effective communication
- Knowledge sharing, and Active participation

Long

- Growth in size and stability of membership
- Well-developed interaction and routines
- Taking on increasingly complex tasks

Project Center for Effective School Practices and Department of Computer Science

Christie L. Blitz
Rebecca Schulman
Center for Effective School Practices
Rutgers University

INSTRUMENTS FOR PLC/RPP MEASUREMENT

Blitz, C.L. & Schulman, R. (2016). *Measurement Instruments for Assessing the Performance of Professional Learning Communities (PLCs)* (REL 2016-144). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Mid-Atlantic. Retrieved from <http://ies.ed.gov/ncee/edlabs>.

Why this tool?

For more than a decade education practitioners have promoted the professional learning community (PLC) as an effective way to provide professional development to teachers (Chapman, Chapman, & Stigler, 2009; Dufon, Eaker, & Dufon, 2009). Though the term "professional learning community" has been used to describe many forms of learning communities (Taheri, 2003), in practice, PLCs are teams of educators (most commonly teachers) who meet regularly (often but not always during school time) to develop lesson plans, examine student work, monitor student progress, assess the effectiveness of instruction, and identify their professional learning needs. These collaborative teams expose teachers to new ideas and practices and can improve their pedagogy through a process of critical reflection (Hod, 1992; Wood, 2007). The goal is to boost student achievement by calibrating PLCs that can improve teaching and classroom practices.

As more PLCs are established in schools and districts nationwide, education stakeholders—researchers, practitioners, administrators, and policymakers—are interested in evaluating the performance of PLCs. Stakeholders want to know more about PLCs' contributions to a range of outcomes, including teacher

Inputs

- Teacher
- Increased PCK
- Strategies for culturally responsive teaching
- Increased CS self-efficacy and confidence, + changes in pedagogy

Outputs

- Teacher
- Increased CS teaching effectiveness / mastery of PCK
- Self-reflection and critical eval that informs improvements of pedagogy
- CS leadership

Outcomes
Long-Term

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TEACHER-LEVEL

- Increased PCK
- Strategies for culturally responsive teaching
- Increased CS self-efficacy and confidence
- + changes in pedagogy



- Increased CS teaching effectiveness / mastery of PCK
- Self-reflection and critical eval that informs improvements of pedagogy
- CS leadership

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Inputs

Outputs

Outcomes
Long-Term

Outcomes
Short-Term

Outcomes
Long-Term

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Inputs

Outputs

Outcomes
Long-Term

Outcomes
Short-Term

Outcomes
Long-Term

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STUDENT

Short

- Greater awareness of and interest in CS and other STEM fields



Long

- Increased self-efficacy, interest, engagement, achievement
- Consideration of CS college degree and/or career

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DISTRICT / SCHOOL-LEVEL

Short

- Increased knowledge of role of CS ed, equity in CS ed, and impact of CS
- Addition of rigorous, equity-focused opps

Long

- URM students participate and are successful in CS courses (higher achievement)
- Mentorship structure for teachers



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THANKS FOR WATCHING!!

Please feel free to reach out if you have any follow up questions, are interested in potential collaboration or otherwise!

Cindy Blitz
cblitz@gse.rutgers.edu
<https://cesp.rutgers.edu>
 Please also connect with me via social media
[@cindyblitzphd](https://twitter.com/cindyblitzphd)
[linkedin.com/in/cindyblitz](https://www.linkedin.com/in/cindyblitz)