RUTGERS

A Case Study of a CS Research Practice Partnership (RPP)

#RUCSReady

CS TEACHING AND LEARNING COLLABORATORY(CS-TLC)

Funded by NSF Awards #1738737, #1837305

GETTING TO KNOW EACH OTHER!

Unique to Me

- Name
- School/Entity
- Position
- If teacher, what subject/grade-level(s) do you teach?

RPPs or PLCs

- What do you know about RPPs and PLCs?
- How (if) different?
- Why might it be helpful to utilize an RPP for purposes of broadening participation in computing?

Experience

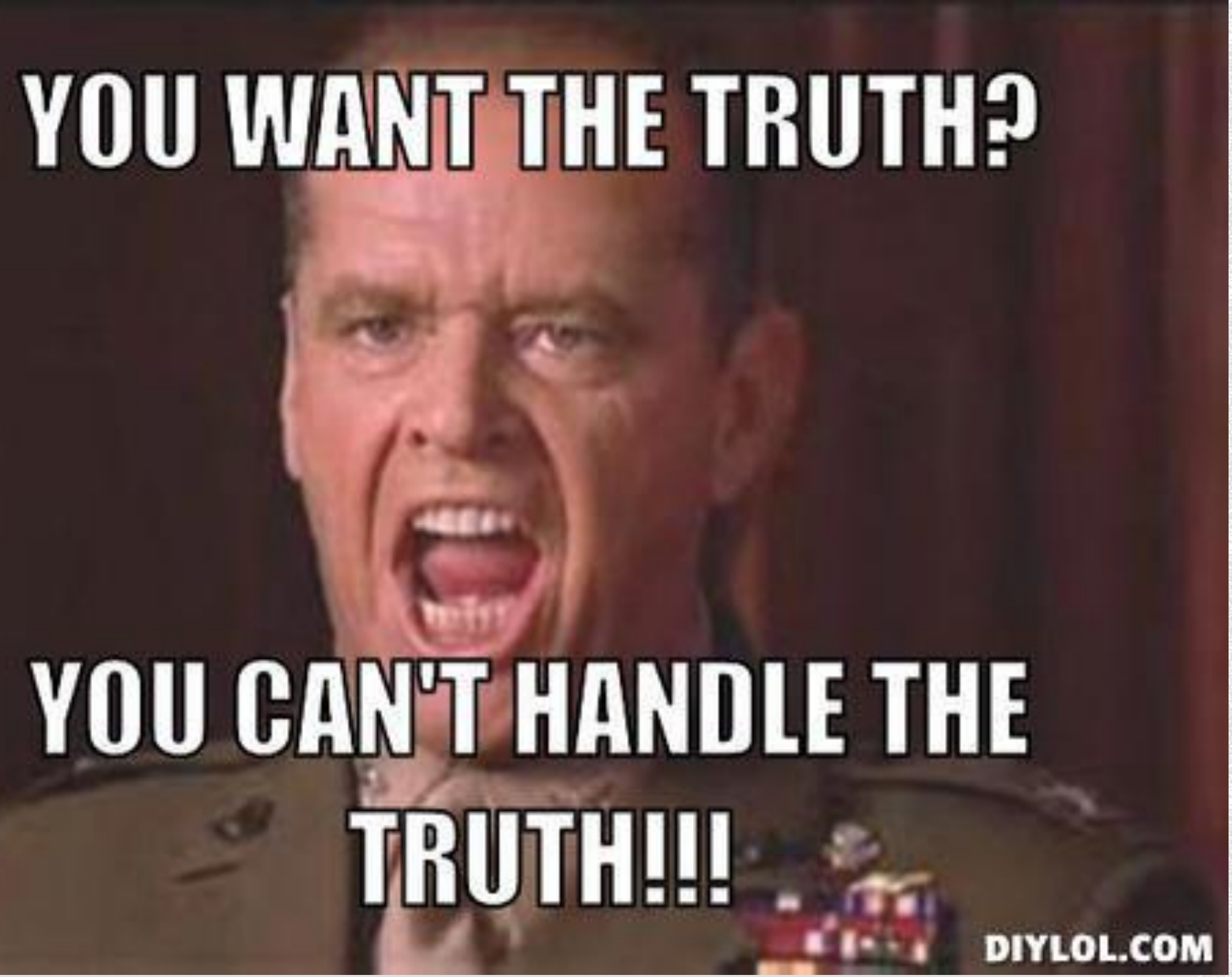
- Have you participated in an RPP and/or PLC?
- What was the focus?
- What was your experience?

@cindyblitzphd
linkedin.com/in/cindyblitz

3

KEY TAKEAWAYS

- Research Practice Partnerships (RPPs)
- Current CS RPP (CS-TLC; NSF funded under CS for All initiative)
- Broadening Participation
- CS Courses, Sequencing, Building upon the CSTA CS Standards



THE REALITY OF COMPUTER SCIENCE IN YOUR DISTRICTS AND SCHOOLS

TURN and TALK

- ✓ **GROUP A, Discuss what computer science looks like in your district/high school. What classes do you offer? Who is teaching and taking the classes?**
- ✓ **GROUP B, What would we like computer science to look like in our districts and high schools? What classes would we offer? Who would be teaching and taking the classes?**

RESEARCH PRACTICE PARTNERSHIPS

What is an RPP?

- Authentic collaboration between LEAs, IHEs, and other partners
- Determine problem of practice to study
- Conduct research and provide findings
- LEAs determine how to apply findings for solving local problems of practice

What is a PLC?

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

RPP Functions as PLC

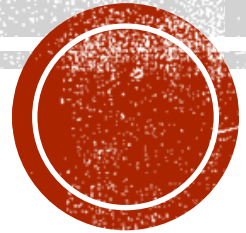
- Working on common problem of practice
- Sharing personal practices
- Reduce isolation
- Collegial practices

WHY WOULD WE CONSIDER CREATING AND MAINTAINING AN RPP TO BROADEN PARTICIPATION IN COMPUTING?

Turn and talk

COMMIT, TRANSFORM, INFLUENCE

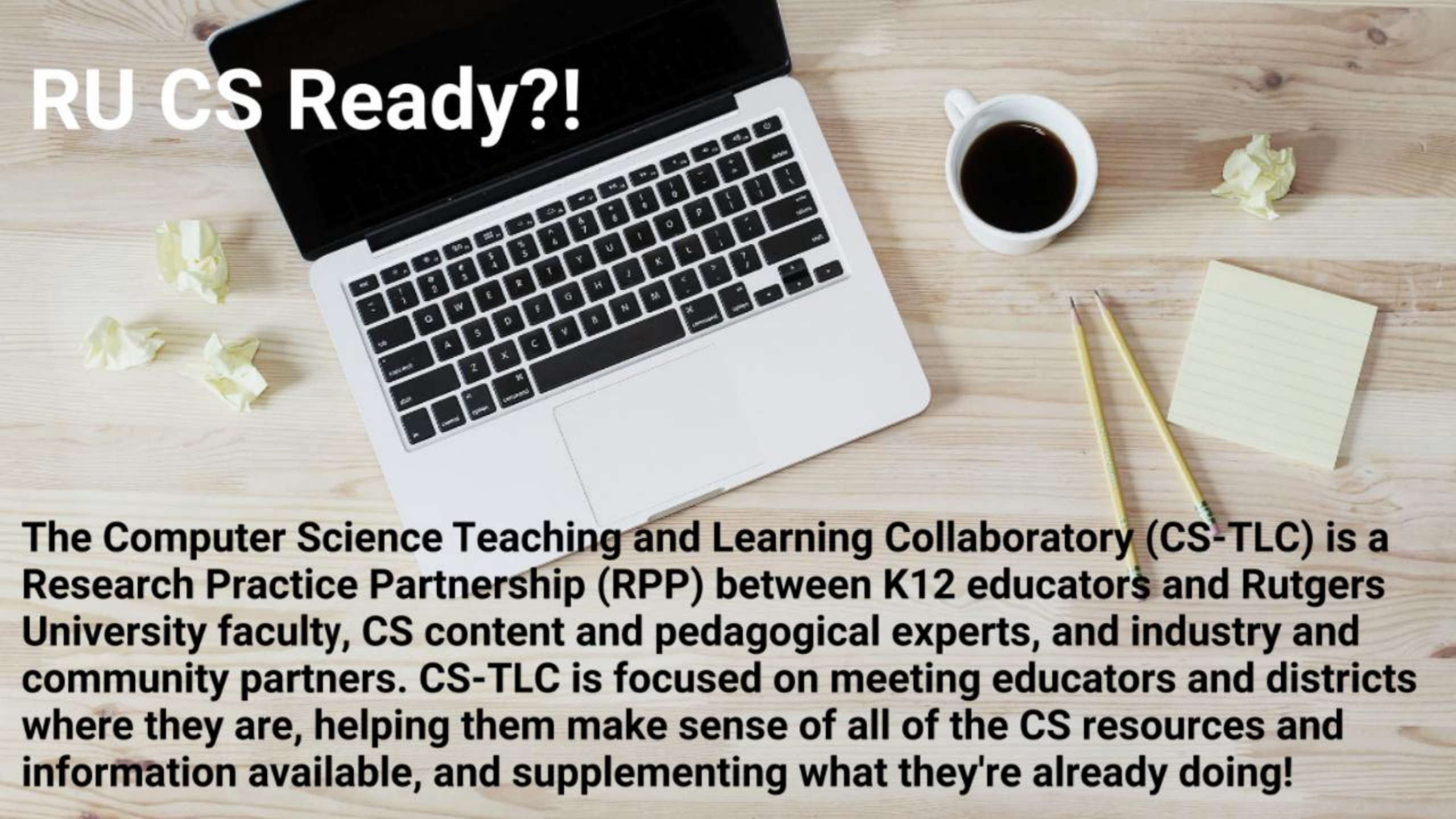
Computer Science Teaching and Learning Collaboratory (CS-TLC)



@cindyblitzphd
linkedin.com/in/cindyblitz

#RUCSReady

RU CS Ready?!



The Computer Science Teaching and Learning Collaboratory (CS-TLC) is a Research Practice Partnership (RPP) between K12 educators and Rutgers University faculty, CS content and pedagogical experts, and industry and community partners. CS-TLC is focused on meeting educators and districts where they are, helping them make sense of all of the CS resources and information available, and supplementing what they're already doing!

Our vision for

CS-TLC

to create a space for collaboration & action, to increase our capacity to offer the most engaging & beneficial CS experiences to our students (all thanks to the generous support of the National Science Foundation (NSF))


Why Join Us?
We're a curated team of Intelligent dedicated practitioners who want to do their best for ALL students and who understand that CS-TLC is stronger than its individual parts
MacBook Air

How does it work?

Participate in virtual RPP meetings
Engage in virtual collaboration opps
Attend a hard-core summer institute

Receive personalized and productive support over a two-year period

Be involved in an iterative process of research and evaluation

Benefits to Teachers

- Gain additional CS content/pedagogical knowledge by working with Rutgers faculty and other experts
- Learn to use students' abilities, motivations, and cultural backgrounds within teaching practice
- Engage with CS initiatives and leadership roles
- Experience positive changes in instructional

Benefits to District/High School

- Increase knowledge re importance of equity in CS ed, the sequencing of courses, and the impact of CS in all fields of study

- Benefit from the addition of rigorous and culturally relevant CS courses by working directly with Rutgers faculty (open up additional opportunities for collaborating - in other content areas, in the transition from high school to college, and in other areas of interest!)

- Increase participation and retention of underrepresented students (including women and those who might not otherwise take a CS-type course) in CS courses

- Create mentorship structure for CS teachers

Oh!
And there are even stipends for teachers and other incentives for district/school participation

and we are productive but have a lot of fun along the way

- ✓Build and expand district/school capacity to deliver high-quality CS education to ALL students.
  - Evidence-based curriculum
  - Delivery of PD

- ✓Establish a supportive network of educational professionals committed to CS for all.
  - Curated team existing within larger networks
  - Connect members around common needs and challenges
  - Create and Support a sustainable PLC

- ✓Leverage expertise and resources
  - Establish a mechanism for sharing best-practices and useful resources
  - Provide a forum for exchanging ideas

@cindyblitzphd
linkedin.com/in/cindyblitz

WHY CS-TLC?

Supplement other PD and training

Focused on pedagogical content knowledge

Ongoing virtual and f2f support

Curated community of educators

HOW CS-TLC?

- ✓ Summer institutes (team building, PD)
- ✓ Bi-monthly RPP virtual meetings
- ✓ Virtual ongoing sharing and provision of PD
- ✓ Connected virtual space and curated resources
- ✓ Surveys, data collection – for analysis and feedback
- ✓ Iterative process of refinement and adjustments
- ✓ COMMUNICATION – open, honest, reach out at any time, talk to us to each other, dialogue… dialogue… dialogue…

@cindyblitzphd
linkedin.com/in/cindyblitz

STEM FOR ALL VIDEO

https://videohall.com/p/1596

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

RUTGERS

Cynthia L. Blitz, Ph.D.[1], Francis P. Trees, DPS[2], and Thu D. Nguyen, Ph.D.[2]

(1) Center for Effective School Practices, Graduate School of Education

(2) Department of Computer Science

PROJECT GOALS

GOAL 1
Actively engage educators in an RPP focused on broadening 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 underrepresented students' abilities, motivations, and cultural backgrounds.

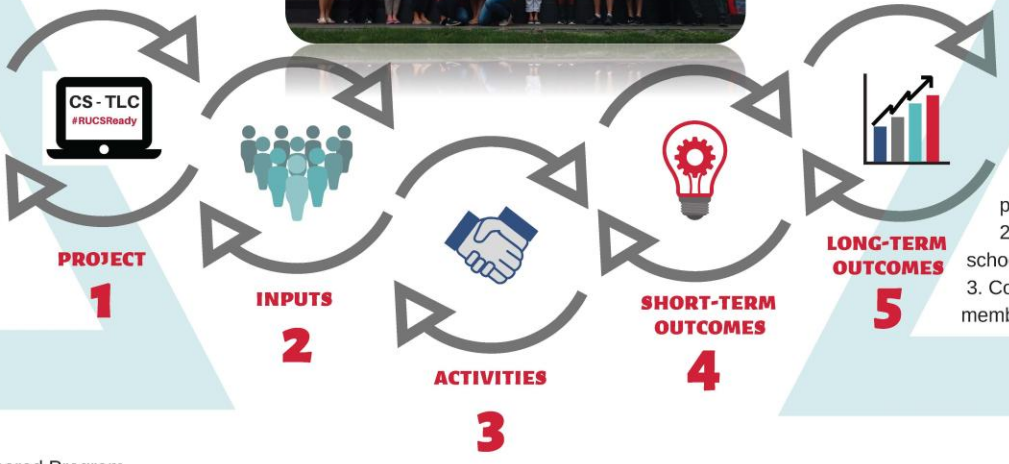
GOAL 3
Invest in the capacity of high school and district leaders to plan, implement, manage, and evaluate programs and policies that can support rigor and equity in CS education.

GOAL 4
Actively engage educators in an RPP focused on broadening 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 underrepresented 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 inequity challenges in schools and districts by utilizing rapid, iterative, and content-expanding research cycles.



RESEARCH PLAN

1. Assess the degree to which the RPP is achieving its goals. Examine the growth of the RPP over time and how it may increase or decrease the ability of the RPP to achieve its goals.
2. Track improvements in teacher content and pedagogical CS knowledge.
3. Record any indicators of systemic changes within districts and schools that occurred as a result of administrators' participation in CS-TLC activities.
4. Measure any change in student enrollment, performance, satisfaction/interest, and career aspirations.
5. Explore the relative effectiveness of F2F and virtual PD and support concerning teacher outcomes for different groups of teachers 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 school districts in NJ and PA.
3. Content experts, TA providers, community members, and industry representatives.

#RUCSReady

PARTICIPANTS

National Science Foundation Sponsored Program
Award # 1738737 and #1837308

Contact Information:
cindy.blitz@gse.rutgers.edu
732-564-9100, xt 21

Computer Science Teaching and Learning Collaboratory (CS-TLC)

Information Overload: Navigating CS Resources Without Reinventing the Wheel

RUTGERS
Center for Effective School Practices

Cynthia L. Blitz, Ph.D.
cindy.blitz@gse.rutgers.edu
732-564-9100, xt 21

OVERVIEW

This NSF-funded project builds the capacity of an established research practice partnership (RPP) to address equity in CS education for underrepresented students. The Computer Science Teaching and Learning Collaboratory (CS-TLC) is a curated forum of a diverse group of education stakeholders designed to facilitate and leverage the exchange of knowledge and expertise and to promote collective inquiry regarding the most efficient and effective way to navigate existing resources and opportunities in CS.

THE CHALLENGE OF INFORMATION OVERLOAD

There are already many excellent CS curricula and resources including lesson plans and classroom activities available to both novice and experienced CS teachers. There is also a plethora of professional learning opportunities they can choose from. The challenge is how to make an informed choice about CS resources that provide the best match to the unique needs and circumstances of teachers and students. This is not a new problem. Information overload is a well-documented unintended effect of today's complex and rich information environment (1), which increasingly impedes users' ability to access and retrieve relevant resources in a timely and efficient manner (2). Modern information retrieval requires searching, identifying, finding, and evaluating relevant information, and then organizing it in a way that ensures efficient and effective use (3). In theory, information and communication technology can greatly improve this process, but ultimately it is the way users use such technology that determine its usefulness. It is therefore common to engage users themselves in the process of co-designing and testing such knowledge management and collaboration platforms. An important goal of CS-TLC is to engage members of the RPP in a co-design process that will ensure the end product is both useful and sustainable.

National Science Foundation Sponsored Program
Award # 1738737 and #1837308

THE CO-DESIGN PROCESS

The extant information science literature provides numerous prescriptions regarding how to individuals can manage information overload (4). However, such user-oriented solutions are useful only to the extent that the systems people interact with are user-friendly. Engaging users themselves in a systematic process co-designing the system they will ultimately use is increasingly considered best practice (5). This iterative process progresses through a series of five steps, which each step building on the previous one:

Step 1: needs assessment (understanding the needs of diverse group of users, e.g., novice vs. experienced CS teachers).
Step 2: access (taking stock and curating available resources or existing repositories of resources)
Step 3: knowledge management (classifying and organizing resources in the most intuitive way to users and their needs)
Step 4: ranking (screening and ranking available resources for quality, relevance, and potential for broad application)
Step 5: maintenance (setting procedures and tools for users to add and share additional resources, including the one they create).

VISION ARTICULATION

One of the first steps of the co-design process is conducting an exercise where users are asked to envision what the end program will look like. Below are ideas raised by the group:

Given information is ever changing, should we have guidelines on how often to update our sources?

Can we create a 'capsule collection' of CS resources?

What are the basic pieces you need to underpin everything else?

What are the most versatile and foundational items?

Should each teacher be free to access and use any resource they want?

Or do different circumstances warrant different norms and procedures?

Is there a place for a PLC team to support choices about CS resource use?

The critical question…

How does one take control of their CS resource environment?

References

(1) Koltay, T. (2018). The bright side of information : Ways of mitigating information overload. Könyvtári Figyelő, 28(1). Retrieved from http://search.proquest.com/docview/2052630399/
(2) Bawden, D., & Robinson, L. (2009). The dark side of information: overload, anxiety and other paradoxes and pathologies. Journal of Information Science, 35(2), 180–191. https://doi.org/10.1177/0165551508095781
(3) American Library Association. (1989). Presidential committee on information literacy: Final report.
(4) Shrivastav, H., & Hiltz, S.R. (2013). Information overload in technology-based education: A meta-analysis. AMCIS.
(5) Sanders, E. B. N., & Stappers, P. J. (2008). Co-creation and the new landscapes of design. Co-design, 4(1), 5-18.

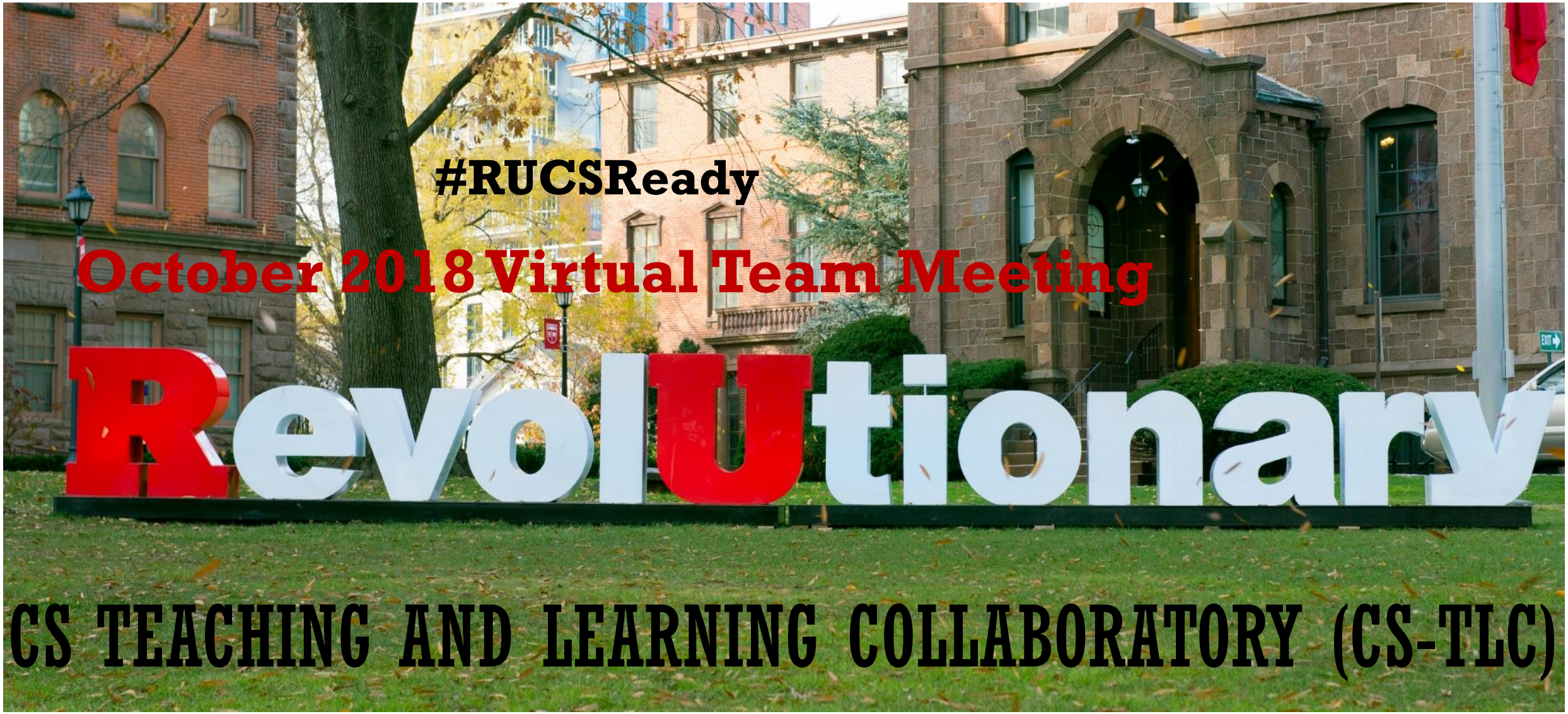
SAMPLE CS-TLC RPP VIRTUAL MEETING

BEFORE WE GET STARTED, HERE ARE A FEW HOUSEKEEPING DETAILS

- We have muted everyone by default (to help with meeting flow & sound quality), however, **when you want to talk, please just *click the microphone icon* in the bottom bar to mute/unmute yourself**.
- When someone is talking or sharing their screen, please write in the Chat Box and let us know if you can't see or hear something – or if there is just something you want to share!
- We have also enabled the 'reactions' feature so you should be able to indicate if you're on board, need some clarification, or otherwise.
- **And, please do use the chat box throughout** (e.g., post links to resources, **upload a document**, ask a question, etc.). [One caveat with the Chat Box feature though is that an individual only sees what's in the Chat Box at the time that they join the meeting (so, nothing posted prior). However, we will share all details from the Chat Box with everyone as we are able during and/or after the meeting.]

JUST IN CASE YOU NEED SOME MORE HELP

- Testing Zoom Connection (https://support.zoom.us/hc/en-us/articles/115002262083-How-Do-I-Test-Prior-to-Joining-a-Meeting-)
- How to Join a Zoom Meeting (https://youtu.be/vFhAEoCF7jg)
- How to Share Screen (https://youtu.be/9wsWpnqE6Hw)
- Reach out to us via text or call on my cell phone (215) 837-8249 and we'll try to help you troubleshoot!


#RUCSReady
October 2018 Virtual Team Meeting
RevolUtionary
CS TEACHING AND LEARNING COLLABORATORY (CS-TLC)

POWER HOUR

Monday, October 15th
1:00 – 2:00 PM

AGENDA

- **LEARN FROM EACH OTHER**
  partners' cs efforts (20 min)
- **WHAT'S NEXT**
  work of cs-tlc (20 min)
- **NEW IDEAS**
  learn something new (15 min)
- **CLOSING**
  next steps (5 min)

LEARN FROM EACH OTHER

partners' computer science efforts

WHAT'S BEEN HAPPENING SINCE THE SUMMER INSTITUTE 2018?!

Classes

Students

Community Support

DAILY EVALUATION RESULTS

Session logistical points raised

(a) Round of introductions,

(b) Link to PPTs, and

(c) More reflection/discussion time

Content/focus points raised

(a) What content falls in the computer science field,

(b) What does a K12 computer science curriculum look like,

(c) Integration of computer science with other classes (challenge notion that CS only exists in the CS course),

(d) Computer science across K12 (adding CS to the K8 environment),

(e) How schools partner with local partners, businesses, community members, higher ed (community colleges and universities)

WHAT'S NEXT?

our collaboration, the work of CS-TLC

#RUCSReady

RESOURCE SHARING AND CONNECTIONS

EVENTS/ACTIVITIES

Google Code-in Contest: 10/23 contest opens, 12/12 students submit work. Students ages 13 to 17 are invited to take part in Google Code-in: global, online contest introducing teenagers to the world of open source development. With a wide variety of bite-sized tasks, it's easy for beginners to jump in and get started no matter what skills they have.

Cyber Career Week Nov 12-17: During the week, learners of all ages, educators, parents, employers, and the community will participate in a national recognition of how cybersecurity plays a vital role in the lives of Americans and how building a national cybersecurity workforce enhances America's national security and promotes economic prosperity

LINKS/OTHER RESOURCES

https://codein.withgoogle.com/

https://www.nist.gov/itl/applied-cybersecurity/nice/events/national-cybersecurity-career-awareness-week

#RUCSReady

CLOSING

commit, transform, influence

@cindyblitzphd
linkedin.com/in/cindyblitz

#RUCSReady

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.

THE PROMISE OF PARTNERSHIPS

RESEARCHERS JOIN FORCES WITH EDUCATORS TO SOLVE PROBLEMS OF PRACTICE

By Gail R. Meister and Cynthia L. Blitz

Some of the valuable learning that practicing educators gain about how to do their jobs better comes neither from intentionally designed professional learning nor daily on-the-job experience and reflection. An

county offices, or state departments of education.

Though professional learning and research-practice partnerships share the goals of impacting student learning and ultimately increasing achievement and can have a number of features in common, they differ in one fundamental way: While intentionally designed professional learning focuses on enhancing educators' awareness, under-

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/jsd-june-2016/the-promise-of-partnerships-june16.pdf

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

This tool compiles 49 instruments for measuring key performance indicators of professional learning communities for teachers. It is intended as a resource for researchers, practitioners, and education professionals who seek solid evidence as the basis for planning, implementing, and evaluating teacher professional learning communities.

Why this tool?

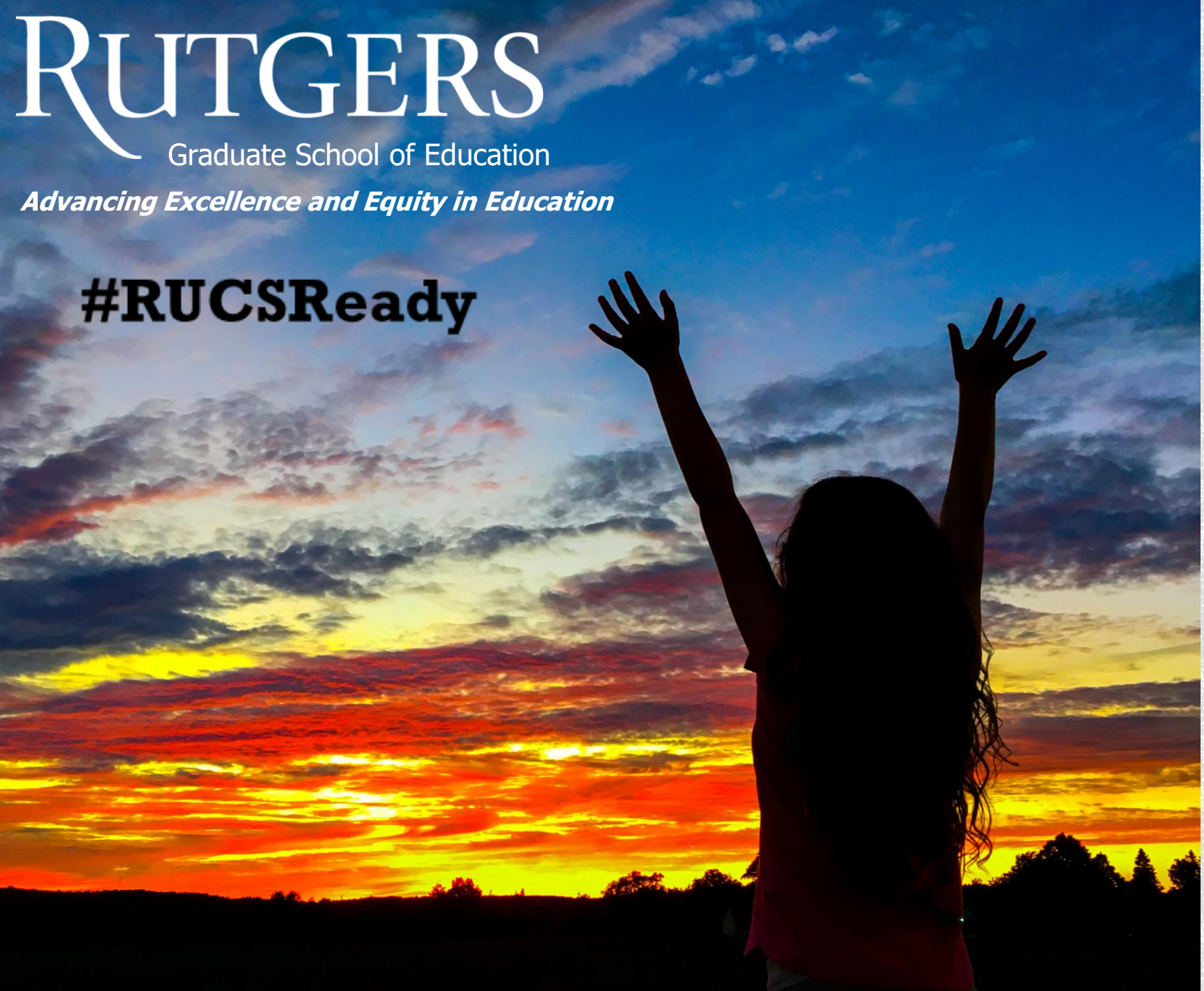
For more than a decade education practitioners have promoted the professional learning community (PLC) as an effective way to provide professional development to teachers (Chappuis, Chappuis, & Stiggins, 2009; DuFour, Eaker, & DuFour, 2005). Though the term "professional learning community" has been used to describe many forms of learning communities (Talbert, 2010), in practice, PLCs are teams of educators (most commonly teachers) who meet regularly (often but not always during scheduled 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 (Hord, 1997; Wood, 2007). The goal is to boost student achievement by cultivating 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

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.

RUTGERS
Graduate School of Education
Advancing Excellence and Equity in Education



THANKS FOR MAKING TODAY A GREAT DAY!!!

- ✓ Please feel free to reach out if you have any follow up questions, are interested in potential collaborations, or otherwise!
- ✓ Cindy Blitz
  - cindy.blitz@gse.rutgers.edu
  - 732-564-2100, x21
  - https://cesp.rutgers.edu/
- ✓ Please also connect with me via social media
  - @cindyblitzphd
  - **linkedin.com/in/cindyblitz**

https://www.powtoon.com/c/fCs8gfOCNeS/1/m