What are the RPP-specific activities and partnership characteristics that shape the extent to which/ways in which RPPs meet their goals for quality CS education?

What are indicators of healthy RPPs that we know were promoted to the community?

To answer the broader research question we needed to understand the current landscape of partnership health metrics and tools. We started by building from the resources shared during the first CS for All: RPP pre-proposal workshop held in 2017 to support future grantees in writing a proposal designed around a research-practice partnership. This workshop was conducted by the Research and Practice Collaboratory led by Bronwyn Bevan with researchers who study research collaborations, in particular Design Based Research, such as Bill Penuel. We also drew from the NSF solicitation itself, looking at how RPPs are discussed and resources suggested to potential submitters when putting together their RPP.

The solicitation and pre-proposal workshop provided insight into how NSF defined RPP and introduced potential grantees to what an RPP ought to look like and do. We expected that many funded projects would utilize this funding agency-provided language in their own project self-descriptions. Projects also chose to include other concepts into what was called an RPP such as co-design, improvement science, and community-engaged research (McGill et al., under review). These definitions and language were derived from RPP work that had occurred in other contexts and other education RPPs, but not focused on computer science. Additionally, because these newly funded projects were often just forming their RPP, we knew that there would be little empirical knowledge to be gained during the early stages of project work.

It's worth noting that the existence of the pre-proposal workshops is an acknowledgement that the majority of the CS Education field are novices when it comes to applying Research Practice Partnership frameworks (NSF #1724562, n.d.)[1]. Given how important healthy partnerships are for smooth functioning toward partnership goals, understanding how partnerships intended to create and sustain a healthy partnership is a key aspect of understanding the overall efficacy of RPPs for accomplishing project and program goals. Also worth noting is that RPPforCS' own knowledge on this topic was deepening simultaneously with that of the community. As we learned more and became aware of additional frameworks, we sought to translate that work into concrete supports for teams (and data collection for ourselves).

Much of the research and learning on RPPs has occurred through the aegis of the WT Grant Foundation, Spencer Foundation, and federally by the Department of Education IES' RPP program. The WT Grant Foundation website on RPPs has served as a resource to our project and to individual CS for All: RPP teams. WT Grant Foundation was also instrumental in supporting the development of several frameworks, approaches, and previous efforts which informed our understanding of the components of healthy partnerships and structuring partnership improvement efforts:

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[1] As part of the 2019 RESPECT Conference this team of workshop developers published a paper about their efforts, specifically around the question: *What value does the RPP approach bring to K12 CS for All community?* The authors use post workshop survey data for their analyses.
https://drive.google.com/file/d/1CRIV0SBAHddFAY7Ea7ghhTTF88DVEUxI/view

- [Research and Practice Collaborator](#) (Bronwyn Bevan, Bill Penuel, Phillip Bell, Pam Buffington) were part of developing the initial grantee pre-proposal support workshop and facilitated a significant portion of that curriculum. This group ran proposal workshops in 2016, 2017, and 2018 corresponding to RPPforCS cohorts 1, 2, and 3 .
  - The Collaboratory promotes itself as a home for practical examples of how to design and begin building RPPs.
  - RPPforCS extensively promoted the book "[Connecting Research and Practice for Educational Improvement: Ethical and Equitable Approaches](#)" edited by Brownyn Bevan and Bill Penuel, including offering it as an incentive for RPP projects to participate in our data collection.
- The National Network of Education Research-Practice Partnerships (NNERPP) is an organization that sprang out of the IES: RPP funded grantees to support projects' ongoing improvement and learning about RPPs across projects. It is supported by several foundations including William T. Grant Foundation, Spencer Foundation, Bill & Melinda Gates Foundation, Annie E. Casey Foundation, and The Wallace Foundation
- Supported by the WT Grant Foundation Erin Henrick, Paul Cobb, William Penuel, Kara Jackson, and Tiffany Clark developed a framework for assessing RPP effectiveness across five dimensions
  - As a community, we promoted their white paper [Assessing Research-Practice Partnerships: Five Dimensions of Effectiveness](#)
    - This white paper was the basis for our RPP Health Assessment tool, described in more detail below.
  - Anecdotally we know that many projects are using the Five Dimensions framework and/or the Health Assessment tool as the basis of their evaluation plans and evaluation activities.
  - RPPforCS also hosted a [webinar](#) discussing this framework and its application to promote common understanding and use across the community.
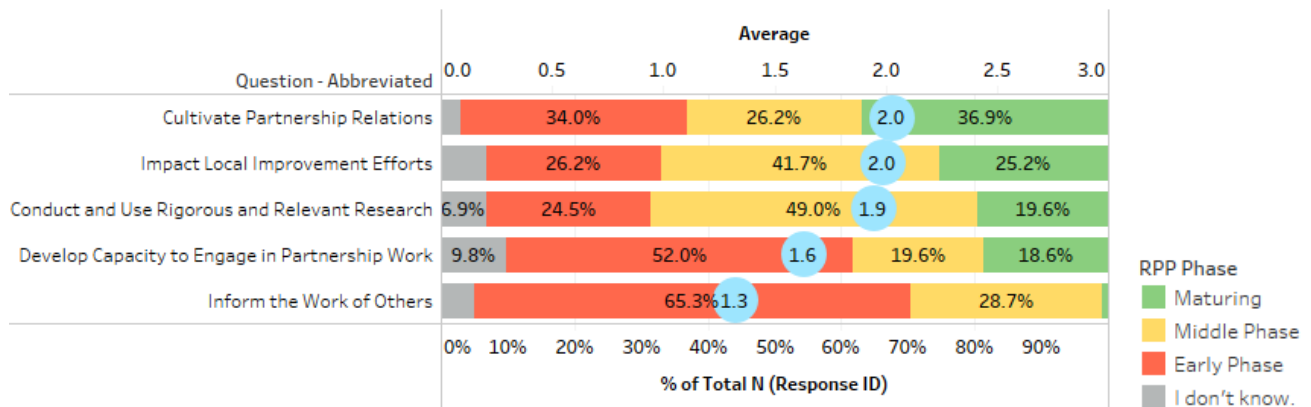
The RPPforCS Health Assessment Tool

As a practical extension of this effort RPPforCS transformed Henrick et al.'s Five Dimensions framework into a tool called the [RPP Health Assessment](#). This tool was designed with the dual purpose of providing a structure for the RPP projects to reflect on their RPP design and documentation plans and to provide information to the RPPforCS research team about how projects are addressing the challenge of assessing the development of their project as an effective/high functioning RPP. The Health Assessment Tool asks participants to identify for each of the five dimensions of RPP effectiveness and their corresponding indicators whether or not they have a) designed for this indicator, b) if the indicator is part of their documentation plan and c) if it is part of their reflection strategy. The tool then asks for an example of how the project has designed and how they document some element of each dimension (if relevant).

The current iteration of the tool was modified from the pilot which asked teams to rate their progress on each indicator based on community feedback. We added the [*Are We a Partnership Yet?* rubric](#) from Dan Gallagher and Bill Penuel (2017). Teams can use this rubric as the basis for a discussion with your partners about your partnership's development, locating what phase of development their partnership is in. The tool was produced as a google sheet, which allows easy inter-team collaboration and easy sharing with the RPPforCS research team.

After the rollout of the initial Health Assessment tool to the RPPforCS community, we conducted short interviews with a few teams who had utilized the tool and reported on those in a [Research Practice Brief](). Through these interviews, we discovered that teams appreciated having the Health Assessment early on to help clarify language and expectations; however, there is little evidence of continued engagement with the Health Assessment as a project matures. We do have evidence that project evaluators are themselves using the Five Dimensions framework and Health Assessment tools as the basis for their partnership evaluation activities, through discussions with project evaluators. As these are some of the first attempts to create usable frameworks for partnerships to monitor their own progress over time, we expected that many teams would draw on these resources for this purpose.
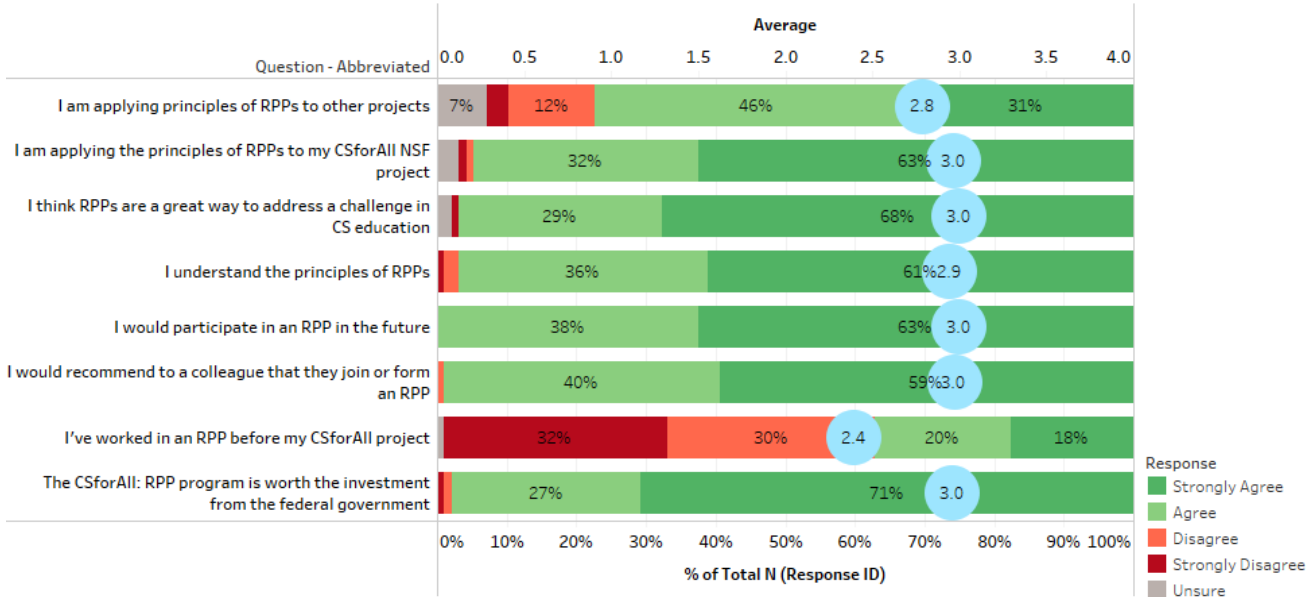
There is an assumption baked into the foundation of the RPP approach that by building strong relationships between practitioners and researchers, you can achieve qualitatively better outcomes and speed the translation of research into practice, and back again. A compounding assumption that is baked into the RPPforCS project is that projects are striving to mature into longlasting RPPs; however, we don't have an abundance of evidence to suggest that all projects are working toward that outcome, or see their RPP as an endeavor independent of the NSF project funding cycle. This is related to partnership health in obvious ways--if you are working toward a deeper, richer partnership, you are by definition intending to create a healthy one. We have been unable to deeply examine an individual partnership to understand the degree of intentionality reflected in that partnerships' application of an RPP framework onto relationship development, RPP infrastructure development and management, and planning for sustainability.

Question - Abbreviated					
Cultivate Partnership Relations		34.0%	26.2%	2.0	36.9%
Impact Local Improvement Efforts		26.2%	41.7%	2.0	25.2%
Conduct and Use Rigorous and Relevant Research	6.9%	24.5%	49.0%	1.9	19.6%
Develop Capacity to Engage in Partnership Work	9.8%	52.0%	1.6	19.6%	18.6%
Inform the Work of Others		65.3% 1.3			28.7%

% of Total N (Response ID)

RPP Phase
- Maturing
- Middle Phase
- Early Phase
- I don't know.

How do different RPPs define/operationalize these indicators of health? Do these RPPs generate their own indicators?

After the initial rollout of the health assessment tool, we spoke with several teams who had engaged with the tool about how they utilized it and any impact that its use had on their projects up to that point. Key learnings from that Health Assessment Research Practice Brief (RPB) are that timing of the activity matters; using a tool like the Health Assessment can promote trust and dialogue among members of the RPP; that the tool doesn't fit every partnership, but can be customized for nearly any partnership. We know through conversations with members of the Evaluators' Working Group that elements of the Five Dimensions framework and Health Assessment tool are being used as a background and inspiration for evaluation activities and instruments related to partnership function, health, and development.[2]

As we note in the Health Assessment RPB, our tool did not work for every project, and in hindsight we ought to have provided definitions or simplified our language. Despite this, every project that we spoke with was able to find some value in the exercise of discussing within their team and reflecting on certain elements of the Health Assessment tool.

Caitlin Farrell is leading a research team to develop validated measures of RPP function, health, and development. Though primarily being developed for researchers who study RPPs, the potential crossover into RPP evaluation is very high. As of September 2020, the research team was engaged in piloting exercises for measures under development. We will continue to work with that research team as they think about next phases of refining and disseminating the measures.

How do RPPs design their partnership activities around these indicators?

Despite not having a shared set of interventions that align with indicators of a healthy partnership, there are a set of themes that have surfaced in RPPforCS which are directly related to the health of a partnership. We aligned several of our activities (webinars, theme studies, and research practice briefs with the Five Dimensions framework including:

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[2] Evaluators draw from other resources such as The Pear institute Dimensions of Success- observation tool https://www.thepearinstitute.org/dimensions-of-success to support the evaluation of student STEM learning experiences, teacher professional development, or other components of the projects beyond the partnership

September 2018 Webinar: Theme Study 1 - Trust and Relationship Building
You can find the [recording here](#) and the [slides here.](#)
December 2018 Webinar: The Dimension of RPP Effectiveness
You can find the [recording here](#) and the [slides here.](#)
October 2019 Webinar: Supporting Practice Partners in Achieving Goals
You can find the [slides here.](#)
November 2020 Webinar: RPP Sustainability
You can find the [video here](#)

Additional related themes emerged as we worked with the community to identify and explore topics relevant to their current questions and experiences. Below are examples of these themes within our activities:
October 2018 Webinar: Making the RPP Work: Project Coordinators and Summer PD
You can find the [recording here](#) and the [slides here.](#)
March 2019 Webinar: Implementation Coherence
You can find the [recording here](#) and the [slides here.](#)
April 2019 Webinar: Teaching Leadership in the Broadening Participation in Computing Movement
You can find the [recording here](#) and the [slides here.](#)

Early on we identified the key role that a project manager/coordinator plays in the smooth logistical operation of the partnerships activities. A person in this role can become a bridge to other organizations, help translate the language of research and practice to aid in mutual understanding; can sometimes offer a more neutral perspective; even teaching people how to work collaboratively. This type of position also creates space within the partnership to be self-reflective because they are able to efficiently handle the administrative burden of a CS Education RPP.

Notes on other influences affecting RPP Development

There is a tension between a central tenet of the RPP approach and the NSF project funding model (and generally the academic research funding model). RPPs are designed to be a long-term effort in which relationships based on trust, mutual respect, and mutual benefit can develop over time. It can be difficult to build and sustain this trust through the life-cycle of a project-oriented funding model. The precarity and perennial panic over funding puts a strain on the project relationship; if the funding disappears, often so do the partnership relationships. Additionally, the effect that this funding model seems to have on funding distribution between research and practice organizations is the continued concentration and routing of monies through higher education organizations, where most researchers are professionally located.

Table 1

	Cohort 1	Cohort 2	Cohort 3	Cohort 4	Total*
2/4-Year University	21	17	17	30	85
Non-Profit	4	11	6	11	32

School District	0	1	0	0	1
Government Body	0	0	0	1	1
Total	25	29	21	42	-

*Note that some institutions received multiple awards, potentially across several cohorts.