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Assessing the Impact of a CSforALL Research-Practice Partnership Using the PROSPER Framework: A Case Study of the Chicago Alliance for Equity in Computer Science (CAFÉCS)

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ABSTRACT

The Chicago Alliance for Equity in Computer Science (CAFÉCS) Research Practice Partnership (RPP) has been working for more than a decade towards their mission to engage in research and development that enables Chicago Public Schools (CPS) to ensure that **all** students in Chicago participate in engaging, relevant, and rigorous computing experiences, increase opportunities for **all** students to pursue computing pathways and prepare **all** students for the future of work. The partnership engaged in an iterative design process to develop a framework for understanding the areas of RPP impact on a district. This paper applies the PROSPER framework to the CAFÉCS case study by deductively coding 26 RPP-led publications and 10 grant awards. The results of this analysis suggest that the RPP was able to make significant impact in the areas of Programs, Research, Organizational Structure, and Policy, leading to Equitable Results for students. We present the PROSPER Framework as a practical framework that other education RPPs can use to assess their own impact on their partner districts. We discuss further questions and areas of interest as means to better understand the interconnected nature of these different areas of impact.

STUDY PURPOSE

The CAFÉCS leadership team sought to document the impact of CAFÉCS on the CPS district, and focused this study on the following research question:

How has the CAFÉCS RPP impacted CS education in Chicago Public Schools?

To answer this question, we developed a practical framework and analyzed grants awarded to the RPP, RPP-led dissemination products, and unpublished partnership documents.

METHODS AND DATA SOURCES

PROSPER Framework Development

- Three co-design meetings with leadership team to develop the components of the framework.
  - Drew on the lived experiences of the RPP team and RPP literature on district impact.

Case Study Data Sources

- Conducted an audit of the partnership's work between 2011 and 2022 resulting in the identification of ten grants awarded to the CAFÉCS partnership between 2011 and 2022, and 34 dissemination products between 2015 and 2022. Of those 34 dissemination products, 8 were removed due to a lack of relevance to understanding RPP impacts, or due to being duplicates (e.g. a paper published in a journal, and the same paper presented at a conference).

Case Study Analysis

- Collaborative process with RPP team to engage in analysis using the PROSPER framework.
  - Conducted 2 video-recorded semi-structured interviews with a CPS program manager and the president of The Learning Partnership, using the framework to understand how the money from each grant was spent, and the areas of impact discussed in published research journal articles, book chapters, and conference presentations.
  - The full set of 10 grants, 26 publications, and unpublished documents were read and analyzed by four of the study's authors using deductive coding (Creswell and Creswell, 2017) and results were synthesized using thematic analysis (Creswell & Guetterman, 2019).
  - Findings were shared with leadership team and feedback incorporated into final results.

PROSPER FRAMEWORK DEFINITIONS & GUIDING QUESTIONS

Programs

We define programs as ongoing structured activities, strategies, or interventions involving district students and staff. RPPs can provide the expertise, research, and resources to identify develop, deliver, and support the implementation of programs (Arce-Trigatti & Farrell, 2021).

How and in what ways has the RPP impacted district programs?

Research

We define research as the systematic study of district-identified needs. Districts are expected to engage in evidence-based decision-making and use research to inform their work as a primary expectation of the Every Student Succeeds Act (ESSA). Research conducted within an RPP can address a district need and inform critical district work related to programs, policies, and practices (Farrell et al, 2022).

What research has the RPP conducted to inform/address an identified district need?

Organizational Structure

We define organizational structure as the systematic arrangement of departments and personnel within a district. District personnel can be directly supported by shared grants, and RPPs can advocate for adjustments to the "org chart" and the dedication of district personnel and resources toward the support of specific policies (Bryk et al, 2023).

How and in what ways has the RPP directly and indirectly impacted the organizational structure of the district?

Policies

We define school district policies as rules, regulations, procedures, and practices adopted by school district departments and school district personnel, as set forth by school boards and district administrators. RPPs can help inform policy development and communication before the policy is enacted, as well how RPPs support the implementation after the policy is enacted (McDonnell & Weatherford, 2016; Anyon et al, 2016).

How and in what ways has the RPP impacted district policies?

Equitable Results

We define equitable results as outcomes that directly address inequities facing students, including access to educational resources and opportunities. RPPs can impact the achievement of equitable outcomes for students through engaging in research and RPP activities designed to impact district programs, policies, and practices. In this case study we rely on the CAPE framework for understanding equitable results in CS education opportunities (Fletcher & Warner, 2021).

How has the RPP impacted equitable results in the district?

CAFÉCS Leadership Meeting. From left to right: Don Yanek, Ron Greenberg, Dale Reed, Andy Rasmussen, Erin Henrick, Troy Williams, Lucia Dettori, and Steven McGee

FINDINGS

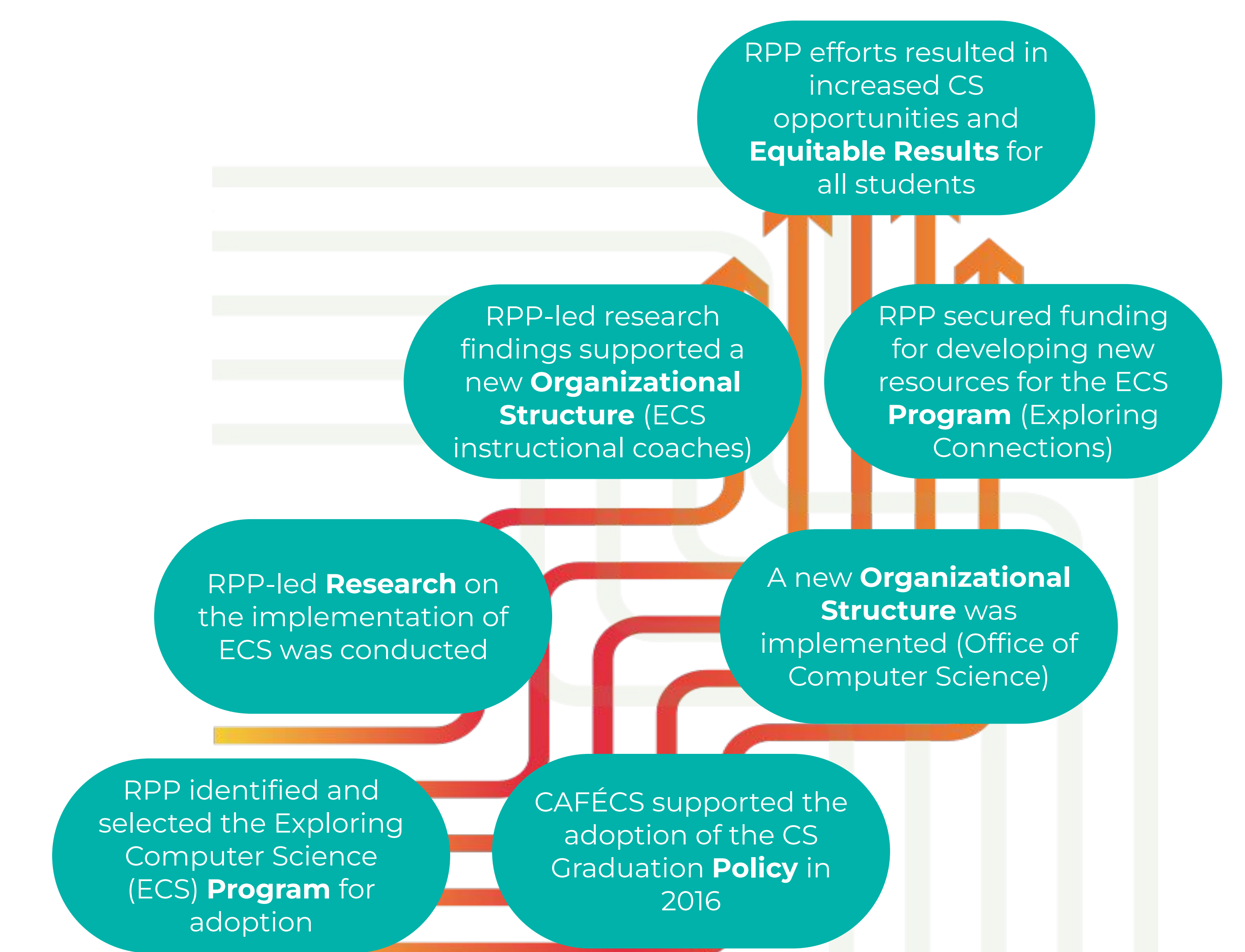| Programs	Research	Organizational Structure	Policy	Equitable Results
CAFÉCS RPP				

The CAFÉCS RPP impacted district program identification and selection, program design, and program implementation.
 	
The types of programs the CAFÉCS RPP impacted include programs related to:
• CS curricula and instructional materials
• CS professional development (teachers, coaches, school leaders)
• Instructional support (coaching, PLC)
	CAFÉCS research:
	
	• Examined district program development and program implementation.
	• Examined district policy design and implementation.
	• Guided student assessment development.
	• Examined student outcomes in CS.
	• Addressed an unanticipated challenge.
	• Examined CS teacher outcomes.
	• Examined partnership health.
		CAFÉCS impacted CPS organizational structures through:
		
		• Indirect involvement in the formation of the Office of Computer Science
		• Organizational structures for existing programs
		  ○ Coaching positions, grant coordinator position, curriculum developer position
		• Organizational support for collaborative research
		  ○ Funding to support conference travel
			CAFÉCS informed policies:
			
			Impacting programmatic offerings
			• CS graduation requirement
			• COVID requirements
			
			Impacting equitable results
			• CS graduation requirement
			—
			When policy doesn't change despite the RPP
			• Hybrid Credit Recovery program ended
				CAFÉCS supported progress towards equitable results via:
				• Identifying inequities through research
				• Addressing inequities through program development and implementation
				
				CAPE Framework Findings:
				• ECS PD program supported a rapid expansion of school **capacity** following the enactment of the graduation requirement.
				• **Access** to CS expanded significantly after the enactment of the graduation requirement.
				• **Participation** in CS increased across all demographic groups.
				• **Experiences** with ECS led to equivalent course performance between students taking ECS before and after the enactment of the graduation requirement.

FRAMEWORK USE RECOMMENDATIONS

We developed PROSPER as a practical framework for assessing the overall impacts of an education RPP on a partnering school district. While we used it as a way of retrospectively analyzing over a decade's worth of grants, research, and dissemination products within the CAFÉCS setting, we envision this framework being helpful in a variety of settings and stages within an RPP's lifecycle and for a range of user and audiences.
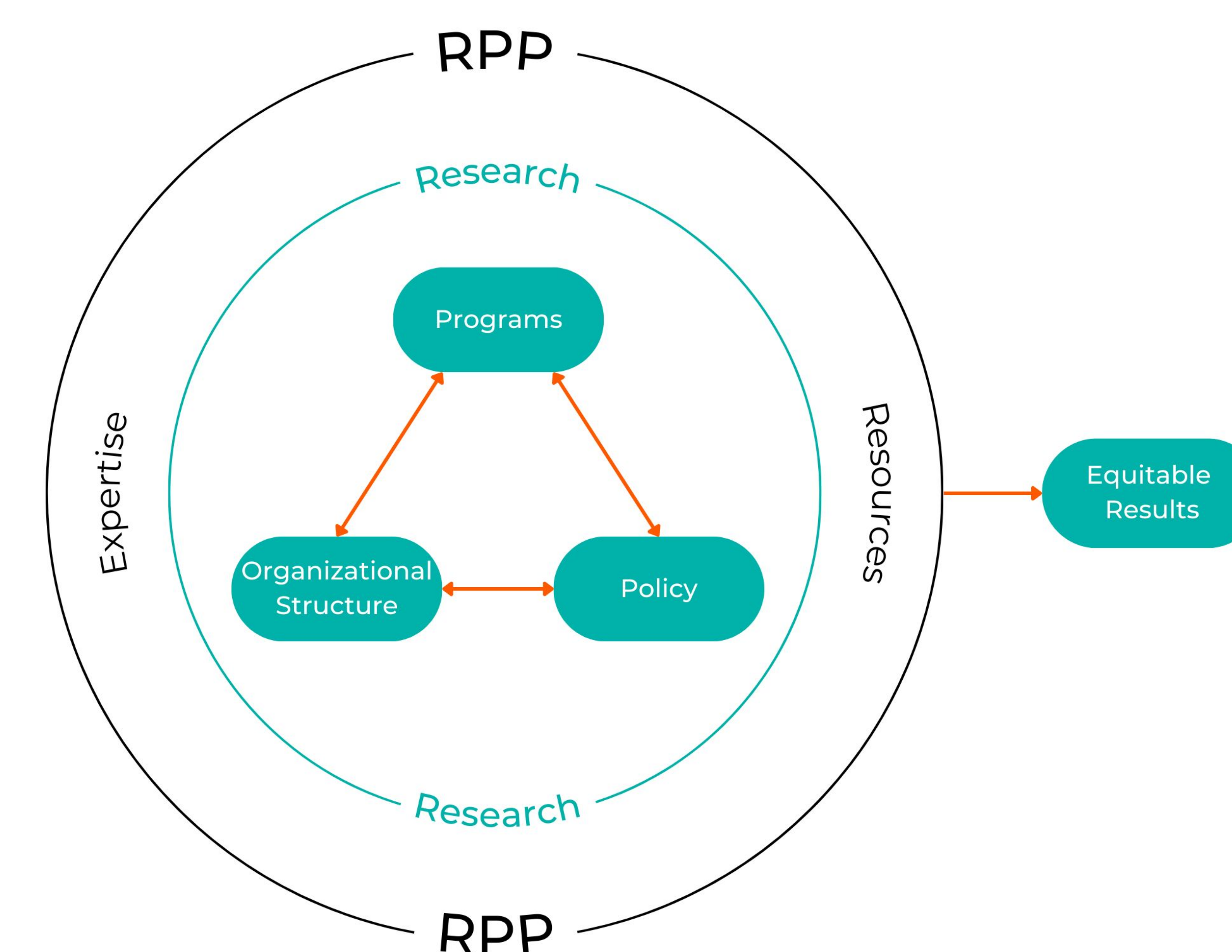
The PROSPER framework can be useful:

- For a new RPP that wants to strategize how they can best impact a school district.
- For an existing RPP's continuous improvement efforts, to document progress in each of these areas.
- When documenting and sharing RPP impact for district leaders, school boards, and funders.
- For educational researchers seeking to examine RPP district impact.

VISUALIZING THE PROSPER FRAMEWORK

ILLUSTRATIVE EXAMPLE

RPP efforts resulted in increased CS opportunities and **Equitable Results** for all students

RPP-led research findings supported a new **Organizational Structure** (ECS instructional coaches)

RPP secured funding for developing new resources for the ECS **Program** (Exploring Connections)

RPP-led **Research** on the implementation of ECS was conducted

A new **Organizational Structure** was implemented (Office of Computer Science)

RPP identified and selected the Exploring Computer Science (ECS) **Program** for adoption

CAFÉCS supported the adoption of the CS Graduation **Policy** in 2016

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