



Peg + Cat: Adventures in Learning

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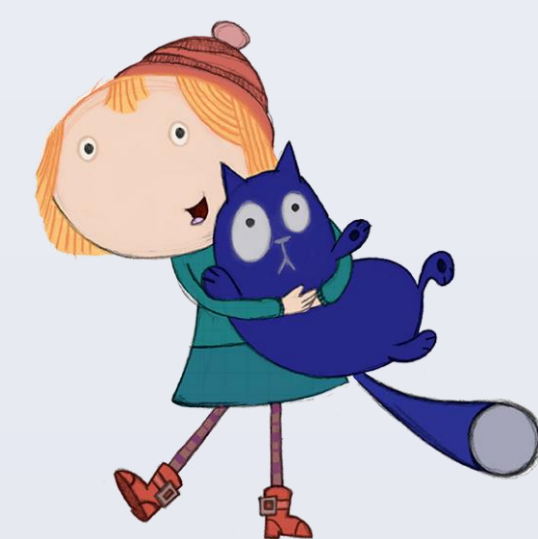
Partners: Pittsburgh Association for the Education of Young Children, Carnegie Science Center, & Rockman et al.

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Project Overview

This project develops and researches the integration of *Peg + Cat* (an animated, math-based PBS television series for preschoolers), accompanying digital media, and early childhood educator professional development (PD). PD is designed to enhance educators' abilities to support preschoolers' social-emotional learning in the context of math activities, and in turn, their interest and engagement in math. The project also includes recommendations for engaging families in early math learning and the development and evaluation of a *Peg + Cat* science center summer camp.



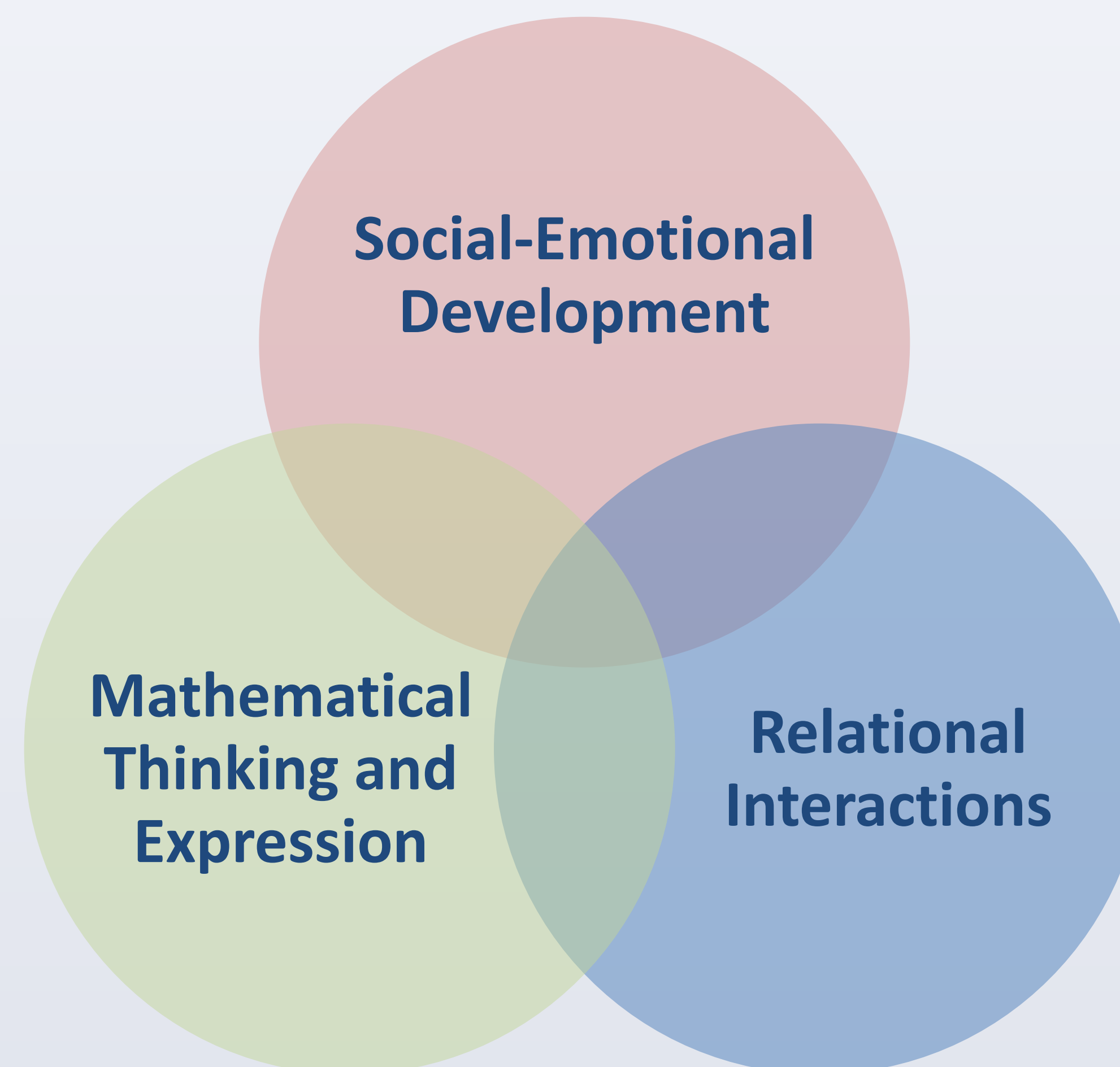
Social-Emotional Skills Can Enhance Math Learning

- In this project, social-emotional learning is conceptualized as persistence, self-regulation, collaboration, cooperation, and risk-taking.
- Social-emotional learning has been repeatedly linked to math development, as found in a meta-analysis of over 200 studies (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011). This relation likely reflects children's increased engagement in learning when they have stronger social-emotional competence (Bierman, et al., 2010).
- Social-emotional competence develops in the early years and may be necessary to facilitate engagement and interest in math (Ansari & Gershoff, 2015).

Project Goals

- Advance young children's informal math learning by producing 25 new episodes of *Peg + Cat* and ancillary games and apps
- Develop and test a "community of practice" PD model that helps teachers infuse their mathematics instruction with meaningful use of media content, responsive teacher-child interactions, and social-emotional learning essential for sustained engagement in mathematics
- Develop and demonstrate a science center summer camp model as a vehicle for informal math learning that integrates media and hands-on activities for young children
- Advance evidence-based understanding of relationships among media and technology, responsive teacher-child interactions, children's social-emotional skills, and engagement and interest in math

A Multifaceted PD Approach to Increasing Mathematical Engagement & Interest



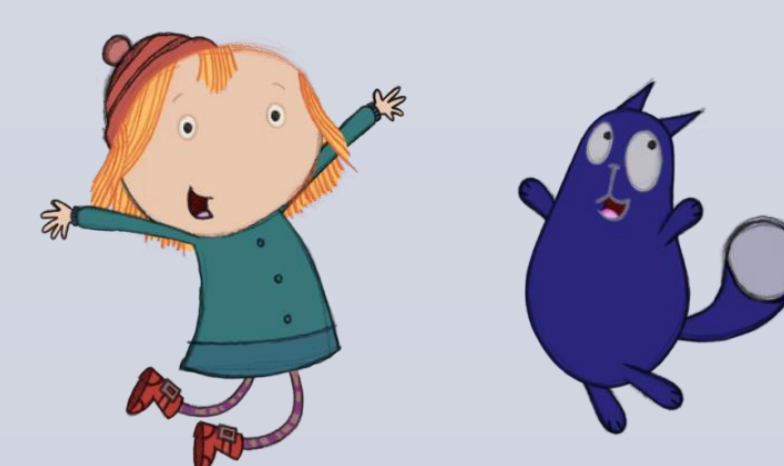
Professional Learning Communities

Goals

- Increase teacher awareness of the role of social-emotional learning in math interest and engagement
- Articulate opportunities to attend to social-emotional aspects of math learning during everyday math activities
- Support teachers as they build families' confidence and interest in math and their understanding of the role of social-emotional learning in math
- Facilitate mathematics and social-emotional instruction with *Peg + Cat* media and digital media

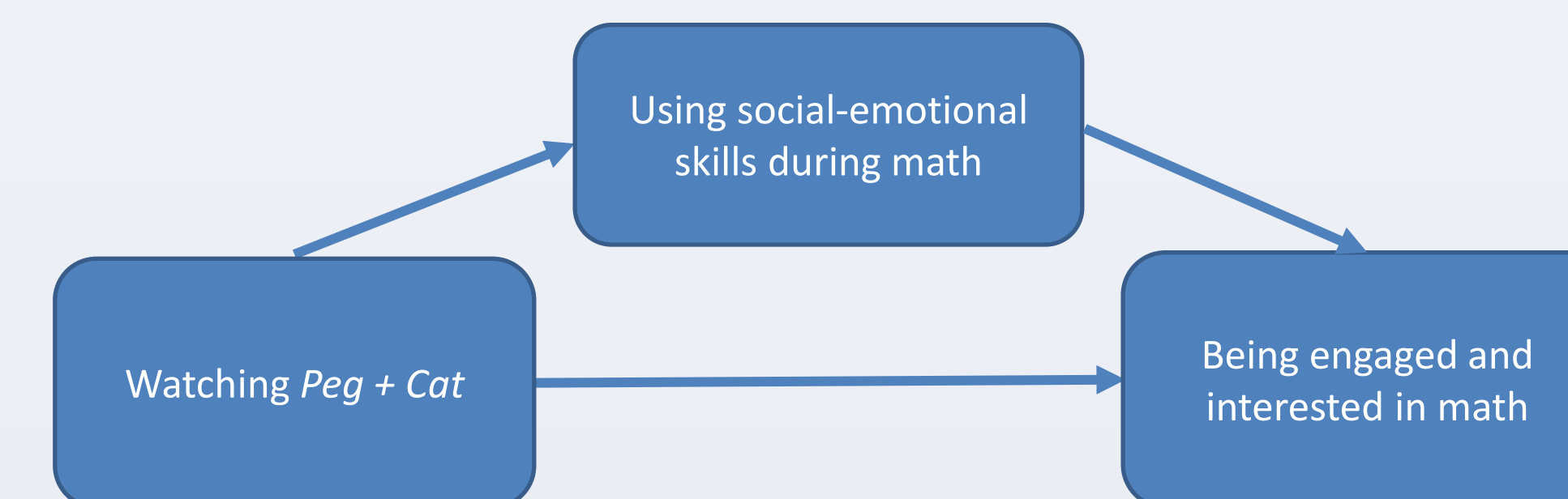
Relational interactions

- "It's through relationships that we grow best – and learn best." -- Fred Rogers
- Connection, reciprocity, scaffolding progress, and inclusive participation are the core features of human interactions that promote learning and development.
- The ideal state is a balanced, reciprocal partnership between the adult and child.

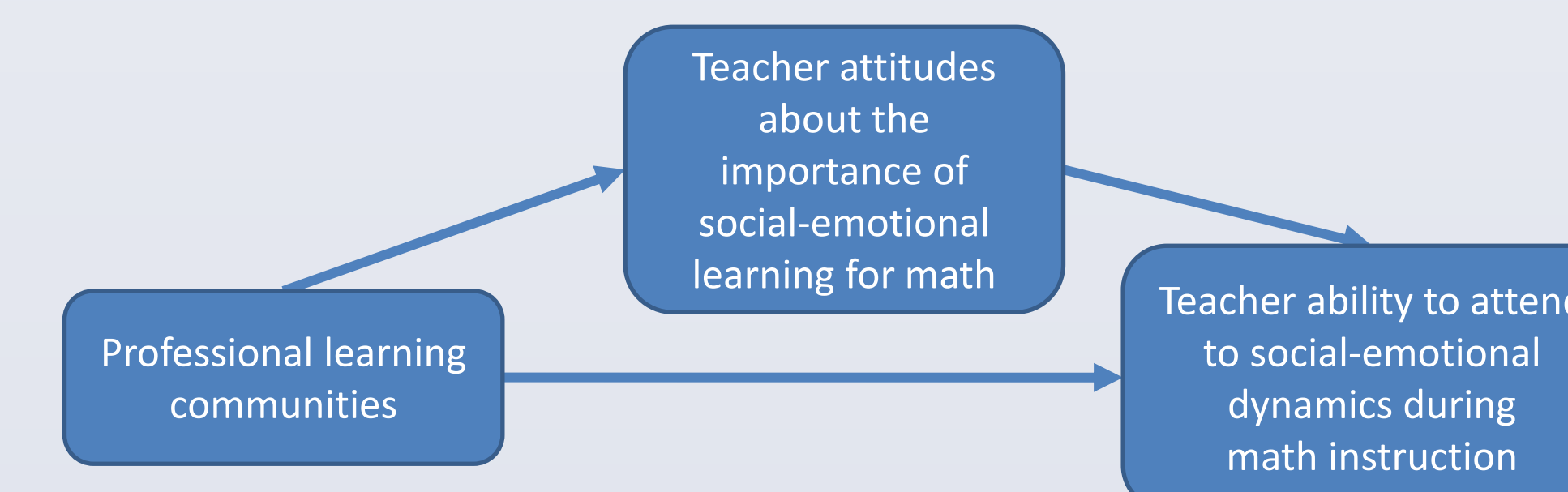


Research Questions

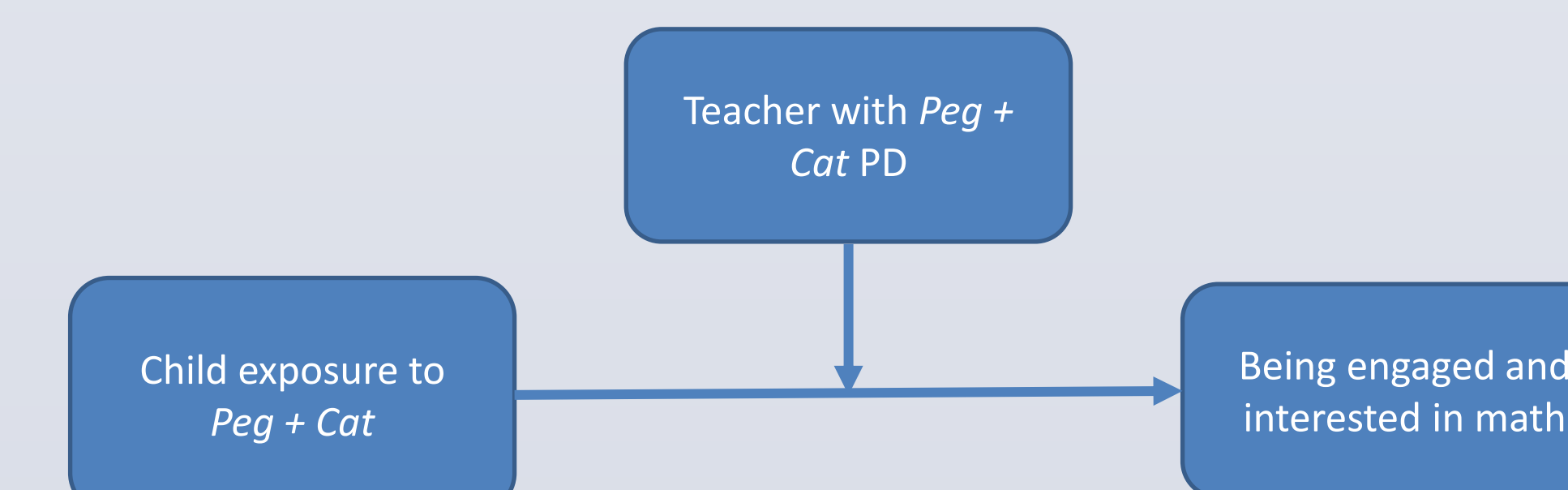
1. Does exposure to *Peg + Cat* media positively relate to children's use of social-emotional skills during math learning activities and, in turn, to their engagement and interest in mathematics?



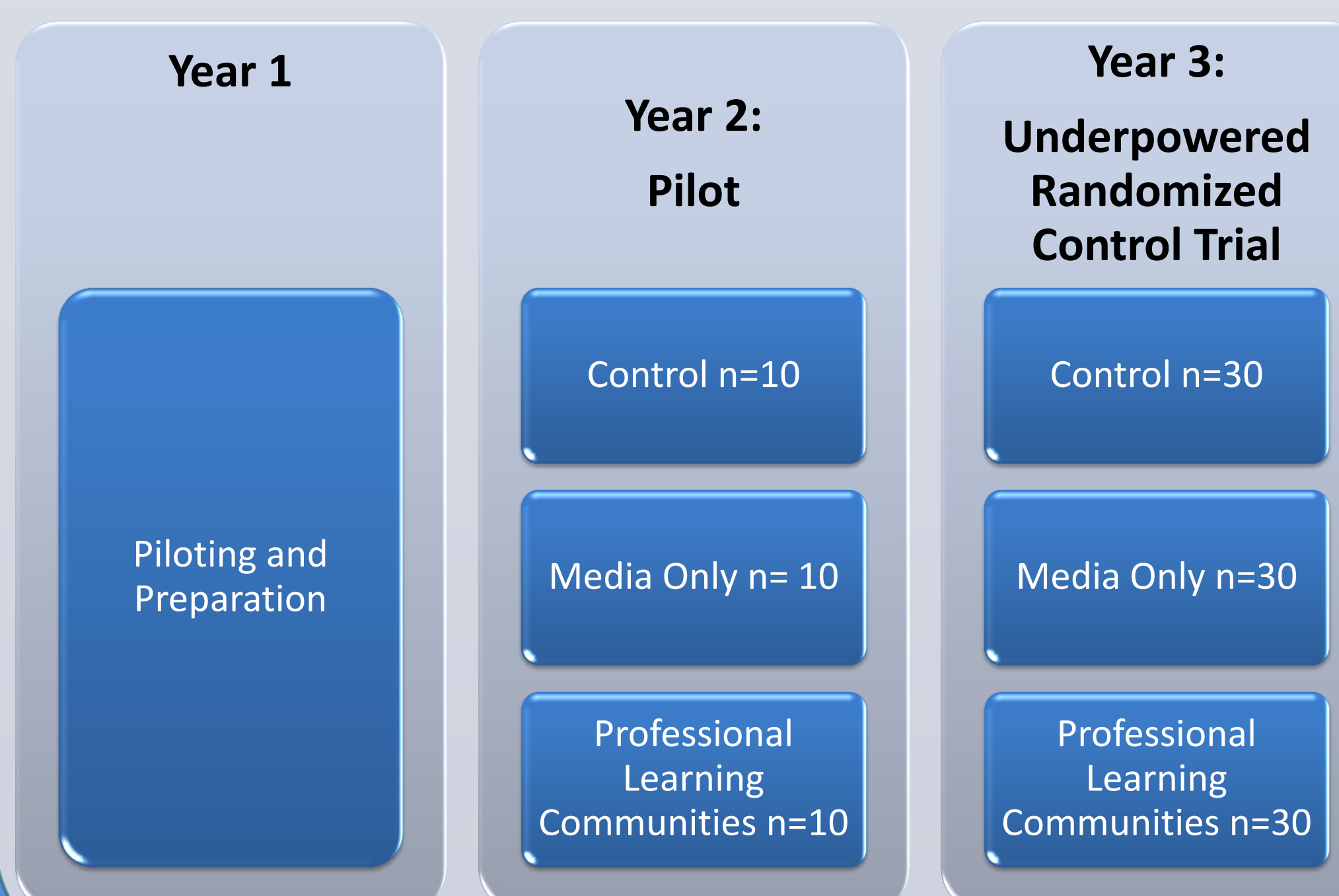
2. Does teachers' exposure to PD, through the *Peg + Cat* professional learning communities, improve teachers' attitudes around the importance of social-emotional skills for math learning and increase teachers' ability to infuse math instruction with social-emotional skills?



3. Does having a teacher that received *Peg + Cat* PD moderate the impact of children's exposure to *Peg + Cat* media on children's engagement and interest in math?



Research Timeline



Research Methods & Analyses

Year one

Use iterative data collection to inform the development of professional learning groups

Years two and three

- Observe PD and classroom activities to assess fidelity of *Peg + Cat* teacher PD, teaching quality, and children's use of social-emotional skills during math activities
- Conduct interviews and focus groups with teachers to better understand the feasibility of implementing the PD
- Survey teachers about a) their attitudes toward social-emotional learning in math instruction and b) children's engagement and interest in math
- Survey parents and teachers about children's exposure to *Peg + Cat* media at home and school

Evaluation

Science center summer camp

- How interested and engaged were children in camp activities? How did they interact with other children and camp facilitators?
- How satisfied were children, parents, and staff with the camp? What worked well and what was challenging?
- Did children's math interest, engagement, and knowledge change from before to after participating in the camp?

Digital media

- What is the quality of digital media being developed in terms of appeal, comprehensibility, ease of use, and clarity of content? What changes could be made to improve these resources?
- What did preschool children, their families, and their teachers think about and learn from their engagement with digital media?
- To what extent did the media highlight positive and helpful interactions among characters?



Challenges

- Identifying discrete instructional intersection of math and social-emotional skills in early childhood classrooms
- Defining social-emotional learning
- Defining a "media-only" condition

Please contact Mallery Swartz at swartz@fredrogers.org with any questions regarding this project.