

The Early Science Initiative

Using science to drive high-quality teaching and learning

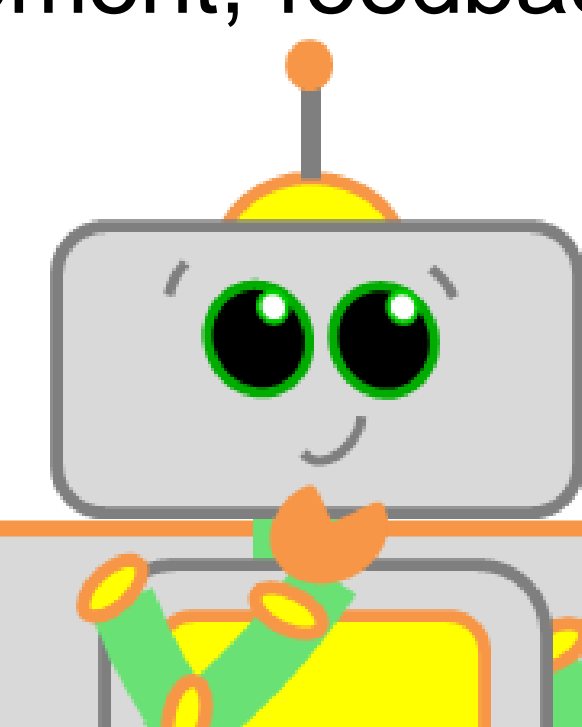
A three-year acceleration grant funded by the Buffett Early Childhood Fund



Why Science?



- Draws upon **children's natural curiosity** about how their world works
- Involves a hands-on minds-on, goal-directed, collaborative teaching approach that produces **high engagement, motivation, and interest**
- Promotes the development of **higher-order thinking skills** and **executive functions**
- Supports learning across **multiple early learning and development domains** (e.g., math, language and social/emotional)
- Elicits teachers' consistent use of **high-quality instructional supports** (e.g., concept development, feedback loops, and advanced language and vocabulary)

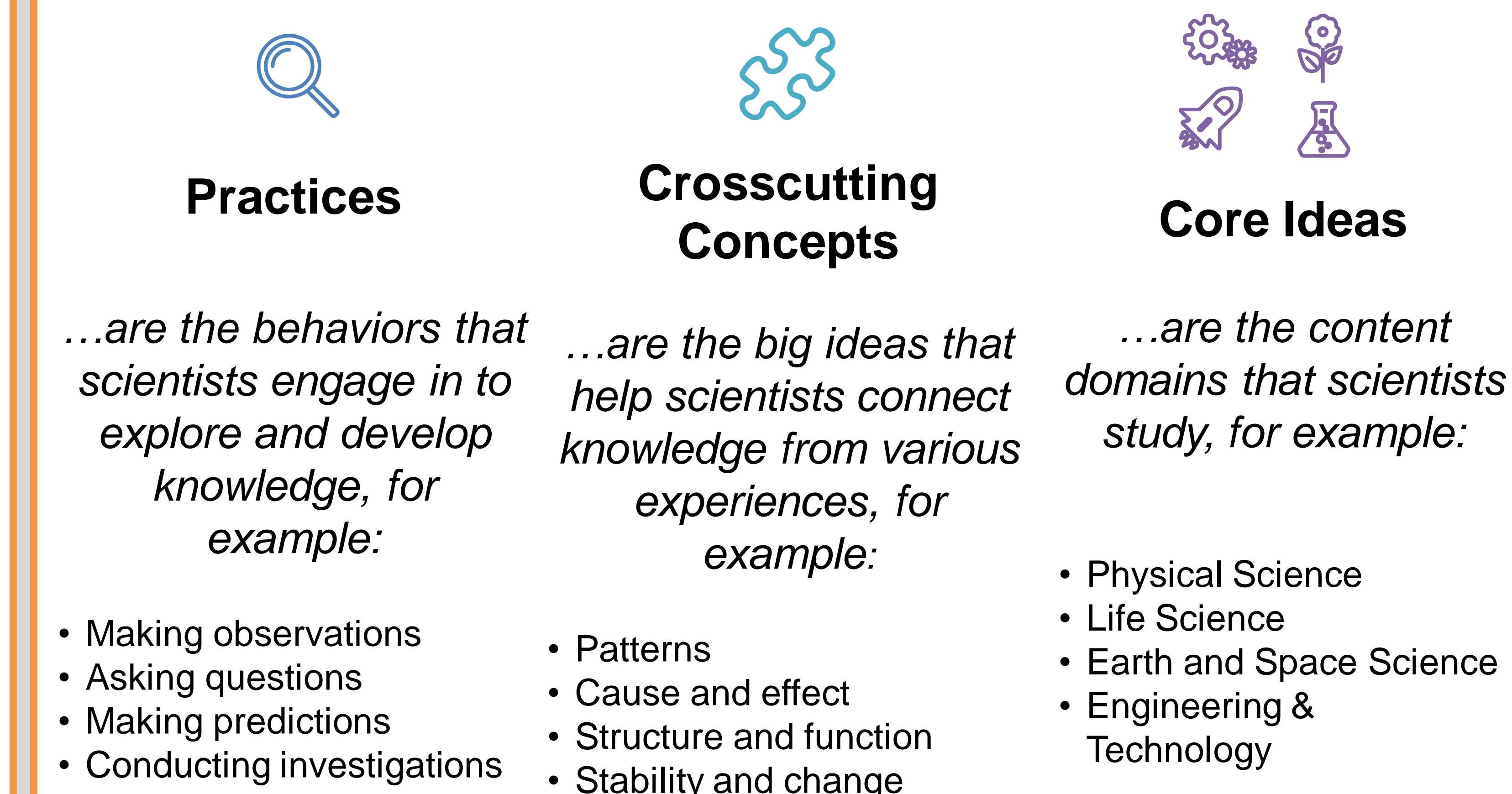


What is the Early Science Initiative?

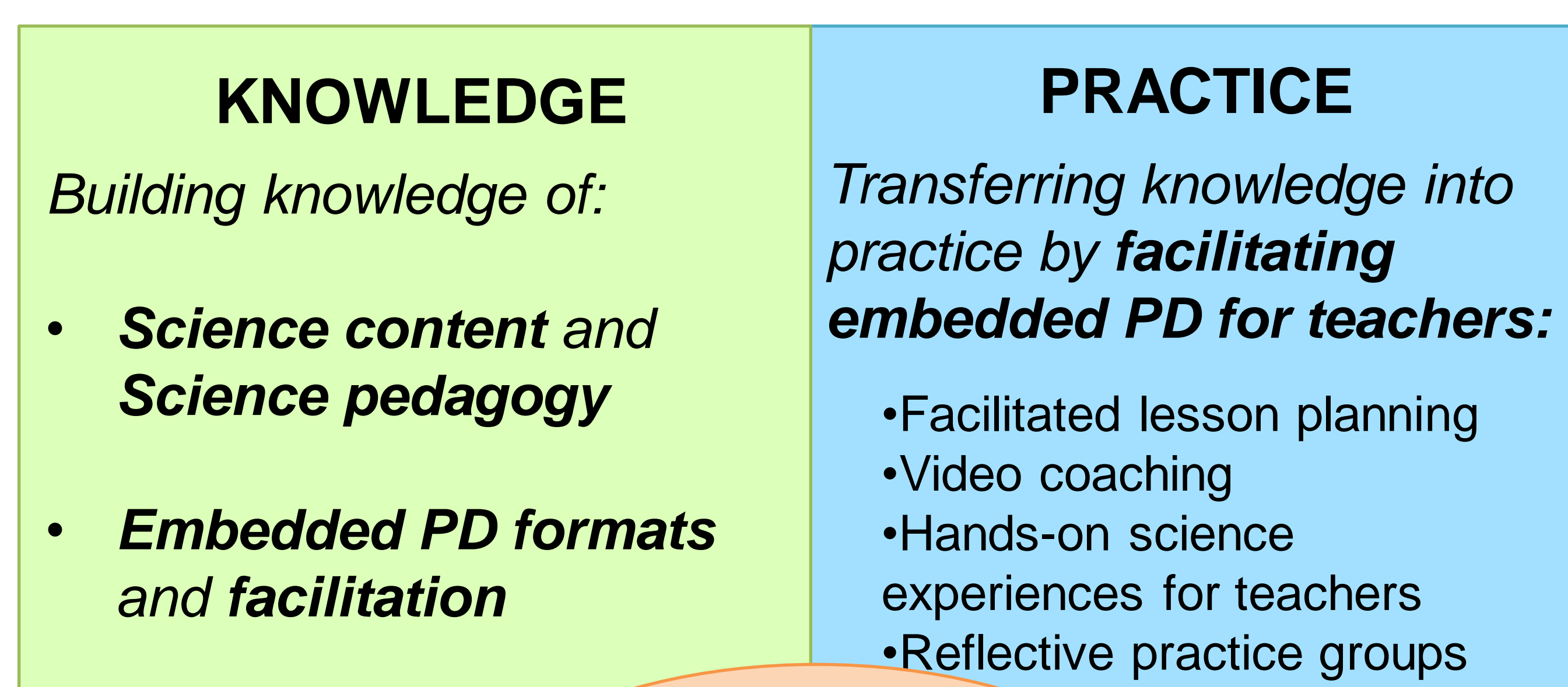
- Who?** ESI is built on a **strategic partnership** among researchers, practitioners, implementation scientists, and school leaders from the University of Miami, the Ounce of Prevention, the Educare Learning Network, and four Educare Schools: Miami, Omaha-Kellom, Omaha-Indian Hill, and Seattle.
- What?** ESI is expanding **intentional science teaching and learning** in early childhood classrooms by supporting Master Teachers (MTs) in providing high-quality **embedded-professional development** focused on the content-area of science.
- How?** ESI is implemented through a **co-constructed process** to support integration into existing systems and practices, and to promote **alignment with individual school cultures**. MTs participate in monthly Distance Learning Sessions and face-to-face professional development (PD) experiences.
- Why?** The goal of ESI is to use science as a foundation to **cultivate a culture of inquiry** that raises the quality of teaching and learning in classrooms, and promotes continuous quality improvement.

The Early Science Framework

ESI has developed an early childhood version of the **National Framework for K-12 Science Education** to provide a developmentally appropriate 3-dimensional approach to science for young children.



ESI: Building on Educare's Model



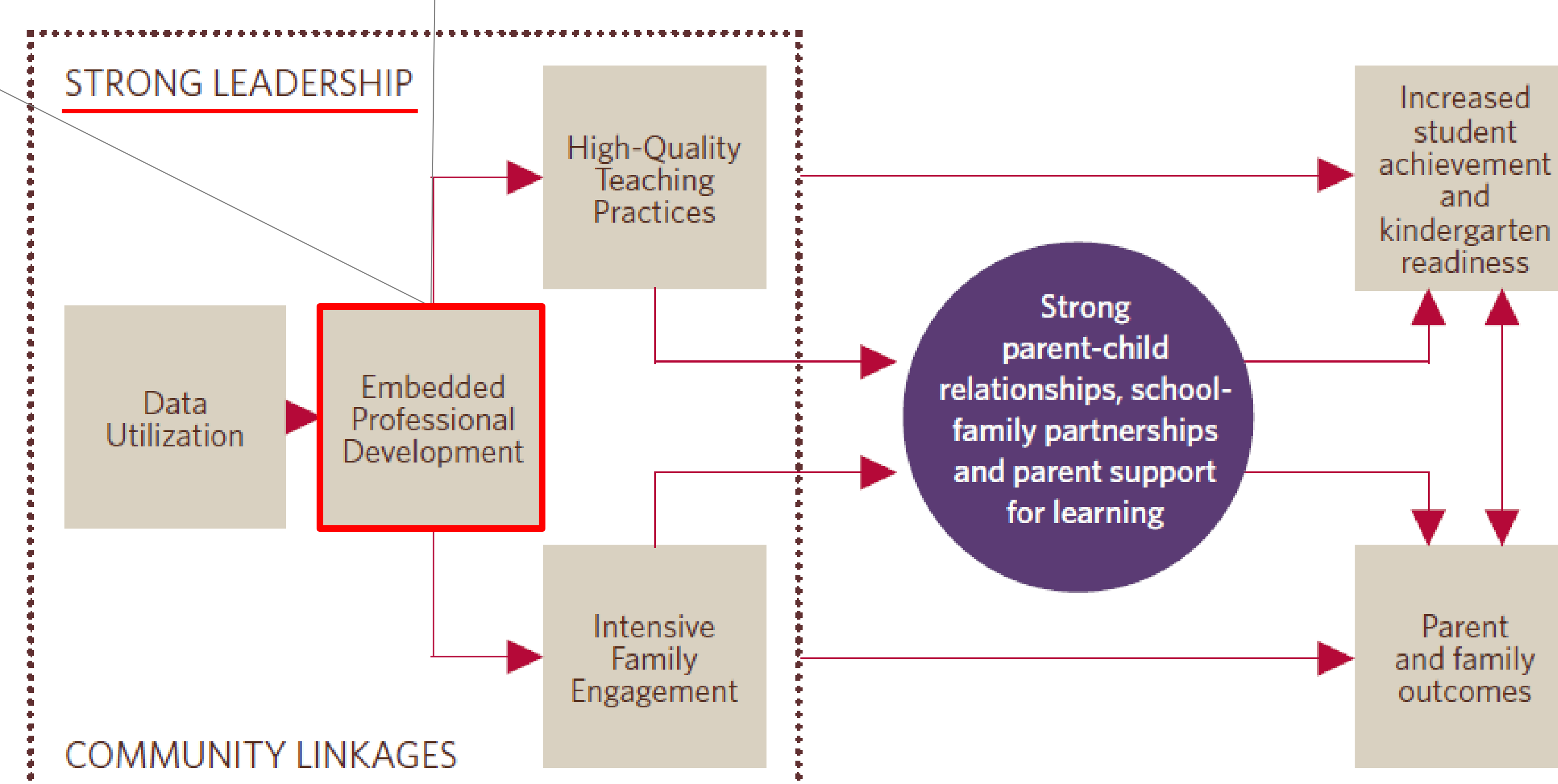
ESI uses ongoing cycles of **knowledge, practice, and reflection** (KPR) as the theory of change from both a **professional learning and science inquiry** perspective.

Our goal is to bring these two cycles together to generate high-impact inquiry-based teaching and learning in Educare classrooms.

REFLECTION

*Reflecting throughout the process with **other master teachers, teachers, directors, and the ESI team***

Educare Model



Leadership supports Master Teachers and Teachers in their efforts to use science as a foundation for high-quality teaching and learning. They protect time for embedded PD and promote a school culture of inquiry and collaboration.

Master Teachers expand their knowledge of science content and pedagogy and use this knowledge to strengthen the quality of instructional guidance and supports they provide teaching teams during embedded PD routines.

Teachers and children directly benefit from improved PD focused on science.

KICK-OFF IN CHICAGO

June 2015

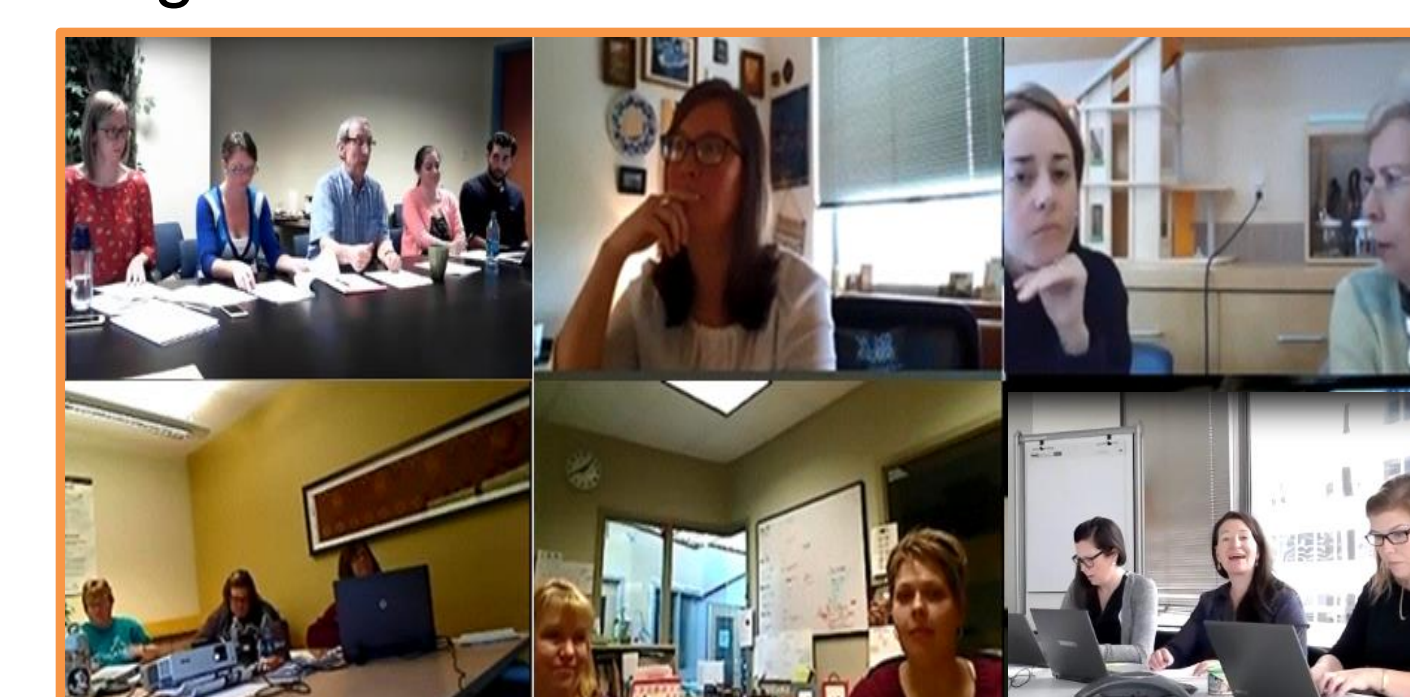
- MTs from multiple schools were brought together to foster a new science-based professional learning community.



- MTs were introduced to the Early Science Framework and had the opportunity to experience the framework in action during a hands-on, minds-on science activity dissecting wind-up toys.

MONTHLY DISTANCE LEARNING

- During these sessions, MTs participate in PD through video conferencing.



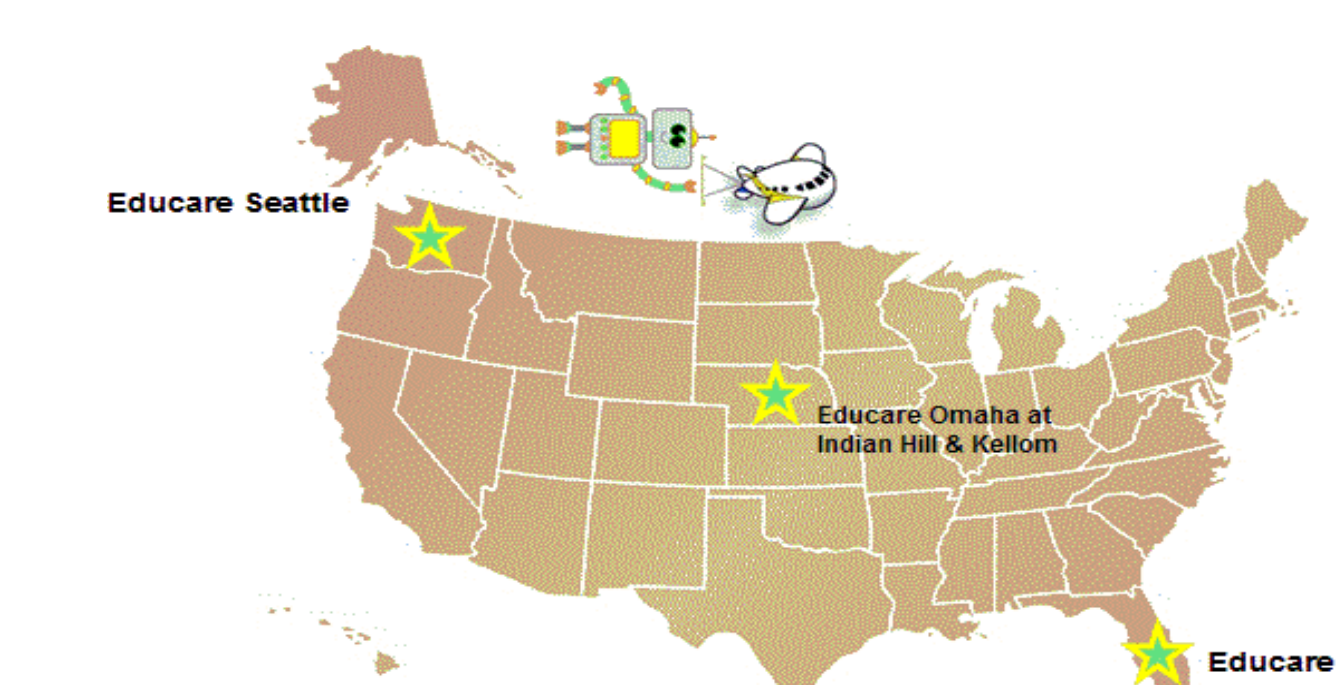
- Together, MTs build knowledge of science content & pedagogy and reflect on their own practice as teacher leaders by engaging in various learning experiences, such as:

- **Looking for Learning:** Identifying science practices, crosscutting concepts, and core ideas in preschool classrooms.
- **Ladder of Feedback:** Using videos to reflect on MTs in their practice providing embedded PD with teaching teams.
- **Lesson planning:** Using protocols and discussion to facilitate intentional lesson planning for science.

FALL SITE VISITS

October 2015

- The ESI team travelled to each school to collaborate with MTs to introduce the Early Science Initiative to teaching teams.



- This gave the ESI team the opportunity to observe classrooms, get a feel for school cultures, and meet with directors to plan for integration of ESI into their schools.



ESI IN ACTION

JANUARY PD IN MIAMI

January, 2016

- All MTs traveled to Miami for a two day face-to-face professional learning experience.



- **Day 1: Erikson's Cognitive Coaching Model**
 - Integrating Erikson's model of coaching into existing embedded PD routines MT's are providing.
- **Day 2: Betsy Zan's Ramps & Pathways**
 - MTs engaged in hands-on learning experiences using ramps, blocks, and marbles to explore the Early Science Framework in action.