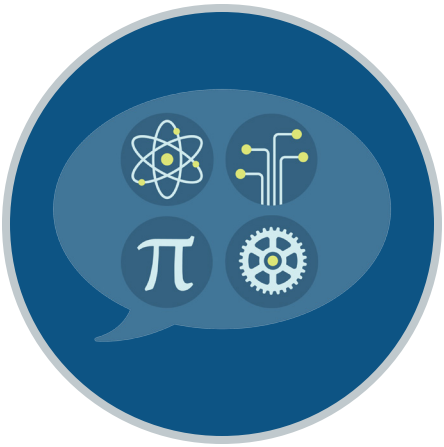

Explanatory Metaphor

# STEM Fluency

A metaphor for how informal environments are important to STEM learning

## The story you're telling:

To gain fluency in STEM subjects, children need immersive learning experiences outside of the classroom.

## Strategically redirects thinking away from patterns such as:

• Attention Battery (Children Need to Recharge) • Back to Basics • Cultural Differences • Individualism • Math = Adding and Subtracting • Naturalism • Out-of-School Learning Is Inessential • STEM = Science Only

# STEM Fluency

## Concepts and ideas included in this frame element:

- **Learning STEM is like becoming fluent in another language:** Uses the analogy of a more familiar learning experience to characterize STEM subjects as skills acquired through hands-on practice in real-world situations.
- **Just like learning a foreign language, STEM fluency requires immersive learning opportunities:** Emphasizes the role and importance of out-of-school experiences as opportunities for in-depth engagement with STEM subjects.
- **High-quality interactions with "native speakers" help children to build STEM fluency:** Illustrates how children benefit from access to well-designed out-of-school programs that connect them with adult mentors who are proficient in STEM.
- **Just as early immersion leads to language fluency, early STEM experiences lead to mastery of STEM subjects:** Demonstrates the desirability of children's early exposure to STEM subjects.

## Original research iteration:

- Out-of-school learning helps children and youth become fluent in Science, Technology, Engineering, and Math—what is called "STEM." Just as people need to be immersed in real-world situations to learn a language, children need to explore STEM outside of the classroom to fully understand and become fluent in these subjects. Out-of-school opportunities like afterschool clubs and summer camps immerse children in real-world STEM situations. When we immerse all young people quality out-of-school learning opportunities, we help them become fluent in STEM.