



Explanatory Metaphor

# Fluency/Immersion

A metaphor for the distinctive characteristics of informal STEM learning environments



The story you're telling:

Just as people need real-world experiences using a language to become fluent, children need to be immersed in hands-on STEM learning to master these subjects.



Strategically redirects thinking away from patterns such as:

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



## 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 the best way to become fluent in a new language is to be immersed in it, 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.
- **People really become fluent in a language when they have to do things in it, such as find their way around an unfamiliar country or figure out how to communicate to get what they need. Hands-on tinkering with STEM concepts helps build fluency, too:** Helps to establish the benefits of program design elements like project-based learning, authentic tasks, or other ways of “doing” with STEM.
- **Just as language has many elements that work together to support fluency (like pronunciation, vocabulary, grammar, or cultural knowledge), the knowledge and skills in STEM subjects are intertwined:** Helps to explain the interrelated nature of STEM disciplines and puts them all on equal footing.
- **High-quality interactions with “native speakers” help children to build a command of STEM subjects:** Illustrates benefits of programs that connect learners with STEM professionals or other adult mentors who are proficient in STEM.
- **The younger a person begins to learn a language, the more likely he or she is to become truly fluent. Same thing for STEM:** Helps to make the case for early exposure to STEM subjects, redirecting the perception that these are “advanced” subjects that should be put off until students are older.



## User Notes:

- 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.