

Project Summary

This poster presents successes, challenges, and lessons learned from the NSF- and Wellcome Trust-funded Youth Equity in STEM project, an international collaboration between science centers and universities in the United States and United Kingdom. Specifically, we outline a practitioner-focused application of ecosystems thinking that encouraged the use of logic models to map educational program activities to pathways for continued engagement within the Portland-area STEM ecosystem, with the goal of establishing “trailheads” to highlight connections between STEM learning opportunities.

Partnership

The Oregon Museum of Science and Industry (OMSI) works with Self Enhancement Inc. (SEI) to deliver afterschool programming to middle school youth and creating collaborative engagement efforts. SEI is one of Portland’s leading multi-service organizations which serves thousands of youth and their families, primarily African American, through delivering culturally responsive programs. SEI is committed to helping youth and families realize their full potential by removing as many educational, cultural, and economic barriers as possible. Both OMSI and SEI are strong pillars in the Portland community, and strive to build confidence in the community using learning and exploration.

Trailheads, Learning Pathways and Ecosystems

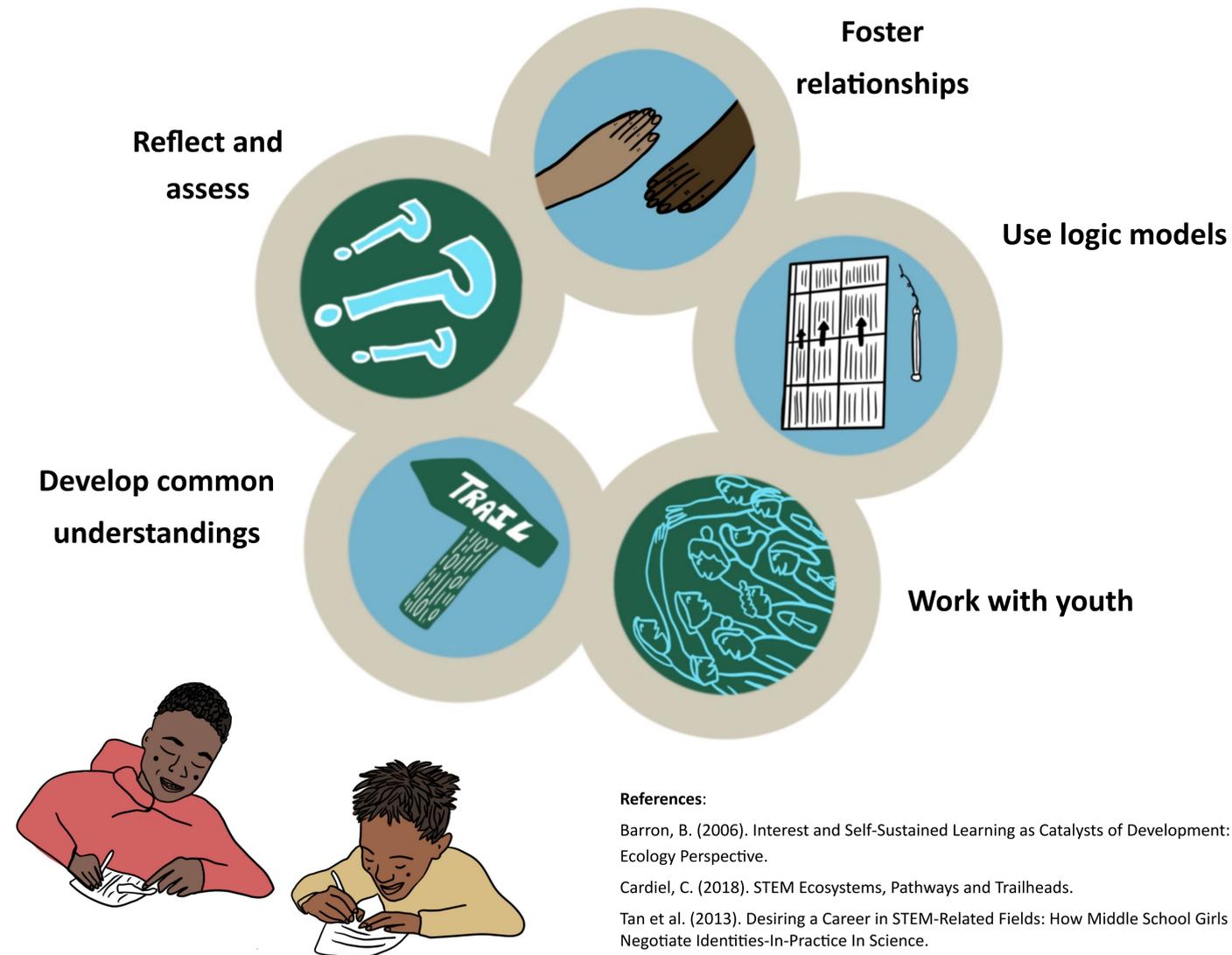
A **trailhead** is an intentional and actionable linkage leading from one STEM learning and engagement experience to another, offering a clear guidepost for learners to follow if they so choose.

A **pathway** is the direction one takes through a particular ecology of opportunities (Barron, 2006), that includes the experiences one has, as well as the practices and tools acquired or needed along the way to personally create a way into STEM (Tan et al, 2013).

A STEM **ecosystem** encompasses schools, community settings, after school and summer programs, science centers and museums, informal exploration at home and more. It is the landscape in which learning takes place, housing a multitude of educational resources crisscrossed by pathways between these resources (Cardiel, 2018).

Exploring the Ecosystem: Mapping and Evaluating STEM Learning Pathways and Connections

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References:

- Barron, B. (2006). Interest and Self-Sustained Learning as Catalysts of Development: A Learning Ecology Perspective.
- Cardiel, C. (2018). STEM Ecosystems, Pathways and Trailheads.
- Tan et al. (2013). Desiring a Career in STEM-Related Fields: How Middle School Girls Articulate and Negotiate Identities-In-Practice In Science.

Challenges

Delivering trailheads proved to be challenging in a few ways. Students were not always able to attend events facilitators had suggested. Transportation and time proved to be the biggest barriers. Youth also expressed that they would benefit from hearing about opportunities in the community that were paid or provided certificates. Ultimately, facilitators found that when delivering trailheads students prefer community involvement, be that from a youth coordinator or their afterschool program to serve as a catalyst for them.

Successes

Throughout the program, youth and facilitators built trusting relationships and were able to work together in developing trailheads. Setting aside time each class to ask for youth feedback created was part of the collaborative process and helped to keep content relevant and useful. When youth expressed an idea or potential community partner opportunity, facilitators listened and worked to build deliverables that youth wanted, thus strengthening their pathways.



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