

Shifting Toward a Connected Perspective in an Out-of-School STEM Program

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Abstract: Out-of-school time (OST) programs have a positive effect on fostering youth STEM interests and are important nodes in a STEM learning ecosystem. Despite this, leaders in OST programs often have an insular, org-focused mindset. By tracking two program leaders over a year, this study investigates the process and results of shifting toward a connected mindset. Findings show that brokering stronger connections with partners supported youth and resulted in greater participation in programs. Implications highlight how shifting toward a connected perspective can strengthen the nodes of a STEM learning ecosystem.

Background

Out-of-school time (OST) programs can have a positive effect on supporting youth exploration and development of STEM interests (Young et al., 2017). OST programs are also important nodes in a STEM learning ecosystem, where schools, afterschool programs, libraries, families, and other community organizations make connections to support learning across contexts and over the lifespan (Gilbert et al., 2020). Despite the important role they play in connecting youth to STEM learning opportunities, “stakeholders are often quite invested in maintaining boundaries” (Ito et al., 2020, p. 64) that get in the way of youth access to truly connected networks. This is likely due to an organization’s sense of self preservation, where community-based organizations are often competing for the same financial and material resources.

Connected learning is an ecosystem approach, where youth interests, supportive relationships, and academic and career opportunities coincide to support learning (Ito et al., 2020). In connected learning, organizations and leaders would ideally make connections across settings to help foster STEM interests (Dahn et al., 2023; Ito et al., 2020). The need to broker interorganizational connections however may run counter to a nonprofit leader’s organizational emphasis on fundraising and growth (Hopkins et al., 2014). To support making connections with other community organizations, leaders need to move from insular, organization-focused mindsets and toward a connected perspective and collective leadership where leaders come together to partner and collaborate on their goals (Hopkins, et al., 2014). In this paper, we explore how two leaders at TGR Foundation engaged in reflection and goal setting, pursued strategic focus, and engaged partners toward a mindset shift. We approach this case study by asking: *How did leaders in a STEM-focused OST program shift from an insular, org-focused perspective to a connected perspective? What were the results of that shift?*

Methods

This study is situated within a research-practice partnership (RPP) between TGR Foundation, a STEM-focused OST program in Southern California, and university partners. We specifically look at the participation of two leaders at TGR Foundation, Gyla, the Senior Executive Director, and John, the Senior Vice President of Programs and Education. In the context of a project aimed at making and strengthening STEM learning connections, TGR Foundation participated in meetings designed to support reflection, goal setting, and movement toward strategies for connecting. Leaders at TGR Foundation joined this research project as a chance to systematically focus on making connections within their connected learning ecosystem that would better serve youth interested in STEM learning.

For this paper, we consider the following data: 1) Four artifacts, including TGR Foundation’s initial strategy generator activity, a researcher listening memo, listening addendum, and a researcher summary of CTE teacher interviews; and 2) Transcripts from three meetings over the course of the academic year (October 2023, December 2023, and August 2024). For analysis, we looked for and identified the mediating tools and processes (Vygotsky, 1978; Wertsch, 2005) throughout the meetings and reflections, looking for results of each as well as moments of change. In the context of this study, mediating tools and processes are those that are sometimes completed independently, but generally external and socially mediated within the RPP meetings; things like design and reflection tools, listening and sharing activities, and discussion.

Findings

Over the course of a year, Gyla and John engaged in a series of meetings with the research team. In these meetings, tools, like a strategy generator and reflection guide, as well as processes like listening and discussion (social interaction and language) acted as mediators to aid the observed shift in perspective (see Table 1). In July through October, Gyla and John focused on reflecting on and understanding their current approaches to connecting STEM learning. In their initial exercise, eight out of their ten suggestions were more organization-focused, with ideas emphasizing organizational changes including programs and classes they could offer, field trips to their learning lab, and transportation solutions. This perspective held until they engaged in active reflection and goal setting that emphasized connected learning. A turning point in thinking occurred when they recognized unsuccessful prior strategies, acknowledged their partnership assets, and revised their approach to center youth mobility between in school, OST, and career focused activities.

Table 1
Mediating Tools and Processes that Supported Perspective Shift

Mediation	Description	Outcome
Tool: Strategy generator	Written strategy generation tool that spurred initial reflection through thinking and writing (July 2023)	Reflection; generation of org-focused ideas
Discussion 1: Talking through strategy generator	Verbal discussion with strategy generation tool in hand; talking through strategy generation responses (October 2023)	Realization; acknowledging unsuccessful prior attempts
Discussion 2: Social interaction	Verbal responses to researcher questions around program assets and network connections (October 2023)	Identification; recognizing partnership assets and choosing goals around two strategies for connecting that incorporate network partners
Activity: Planning, designing, and piloting with partners	Actively reaching out to partners to design for making connections between TGR Foundation's Learning Lab, local school districts, 4-H, and a healthcare industry partner (October - December 2023)	Action; working with partners to plan and pilot connected learning opportunities
Tool: Strategy revision	Applying changes to strategy generation tool that build on initial reflection (December 2023)	Revision; articulating change in strategic approach and partnerships to adjust written strategy
Discussion 3: Social interaction	Reflecting on the new connected approach and planning on future iterations with researchers (August, 2024)	Reflection and Iteration; reviewing changes, outcomes, and improvements needed for next year

After their turning point, Gyla and John brokered a networked partnership with school districts, the local 4-H branch, and industry partners to support career connected STEM learning, pushing OST into career technical education during the school day, bringing students to their learning lab, and hosting career development activities and events with a local healthcare partner. Gyla shared, "it's really important, I think, for us to be seen as a collaborative partner, and a way that we could work together to help them reach their goals in addition to our goals as well." Here they began to embrace a more connected mindset where they support their partners and their partners support them, all in service to youth. In December, they revised their strategy tool and by the end of the school year, reflected on changes and outcomes the project produced. The research partners conducted teacher interviews to gather feedback and TGR Foundation will iterate on the project next year.

Discussion

The process of engaging in reflection and acknowledging less effective approaches opened the door for Gyla and John to think beyond the walls of TGR Foundation's Learning Lab, and into the rich network in their community. By shifting to a connected perspective, they were able to realize that brokering stronger connections with school, district, and industry partners not only supported youth more holistically, but actually produced greater participation in their own programs. Ito and colleagues (2020) identify coordination across sectors in a city or region as a future challenge for broadening access to connected learning. While this study is ongoing, the mindset shift demonstrated here opens an intriguing possibility to consider how working with leaders on intentionally making connections can help them shift from organizationally focused, to network focused and strengthen the nodes of a learning ecosystem.

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