Abstract: An innovative system-building initiative known as the STEM Learning Ecosystems Community of Practice (SLECoP) is transforming U.S. STEM education through cross-sector partnerships between schools, afterschool and summer programs, libraries, museums, and businesses, among others. Although logic models exist to describe how SLEs can make positive contributions toward youth STEM learning in theory, it is unknown how individual SLEs are motivated or equipped to collect the evidence needed to demonstrate their value or abilities to solve the problems they were formed to address. The present study describes the results of a 34-item qualitative survey—completed by leaders of 37 SLEs from four U.S. regions—designed to understand where SLEs are in their evaluation planning, implementing, and capacity-building processes. We found that most SLEs were championed by the extended education sector, and all were highly motivated to conduct evaluation and assessment. Most communities reported a willingness to create a shared vision around data collection, which will help researchers and practitioners track, understand, and improve STEM quality and outcomes in and out of school.

Keywords: STEM Learning Ecosystems, common measures, evaluation, assessment,
The present study examines how the SLECoP embeds evaluation and assessment approaches into its strategies and explores the role that the extended education sector plays in this effort. We begin with a brief review of extended STEM education in the U.S. and the SLECoP. After presenting our research questions and methodology, we summarize key results from a national survey designed to understand where SLEs are in their evaluative planning, implementing, and capacity-building processes. Our conclusions focus on how the extended education sector can be a driving force in the creation of a common evidence base that can track, understand, and improve STEM quality and youth outcomes.

Extended Education and STEM Learning Ecosystems

The importance of educational opportunities occurring outside of the formal school day has increased dramatically in the U.S. over the last decade due to shifting priorities and policies (Afterschool Alliance, 2015). These extended education contexts—which are referred to in the U.S. as out-of-school time (OST) programs—include extracurricular activities at all-day schools, afterschool activities, youth clubs, museum and library programs, and so on. OST STEM learning experiences are attended voluntarily and allow hands-on engagement with a variety of STEM activities in a fun way that sparks curiosity and excitement (Afterschool Alliance, 2015). Considering the different international approaches to extended education, STEM-focused OST programs in the U.S. are characterized by a “hybrid approach” that falls somewhere between free play—reminiscent of programs in countries like Finland and Sweden where children often direct their own leisure time activities in afterschool settings under the supervision of adults—and academic “cram schools”—similar to structured and rigorous programs found in Japan, Taiwan, and Korea that focus on academic achievement to reinforce learning from the traditional school day (Noam & Triggs, 2019).

Providing quality opportunities to explore STEM content outside of formal school settings removes the academic pressure and fear of failure that can contribute to STEM disengagement, even among bright and motivated students (Potvin & Hasni, 2014a). It also supports positive youth development—including fostering quality relationships with peers and adults among other social skills—by offering a safe place for children to learn and play.