Building Supports: (Re)introducing the Informal STEM Learning Professional Competency Framework

Building Supports Towards a Useful, Usable, and In-Use Framework of Professional Competencies in the Informal STEM Learning Field is an NSF-funded project focused on professional learning tools for people working in informal STEM learning (ISL). Our work involves refreshing an existing framework of professional competencies and developing support resources to make it as "useful, usable, and in-use" as possible.

The original Framework was developed over 2016-2018, based on data gathered through a systematic process of deliberation called Developing A Curriculum (DACUM). The product that emerged sought to synthesize what all science center roles shared as core competency areas. The current project builds on this work, with the primary goals of broadening the framework's applicability to ISL spaces beyond just science centers and improving the accessibility, value, and longevity of the Framework. Since 2022, the Building Supports team has engaged ISL professionals to help us understand their immediate challenges, as well as larger cultural shifts related to racial equity, the workforce, and emerging technologies.

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Our Team

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The Informal STEM Learning Professional Competency Framework is a tool for individuals, organizations, and academic programs to understand, plan, and advance their skills, knowledge, and capabilities.

The sections below explain some of the systematic approaches we have used to inform our work improving and developing support resources for this tool.

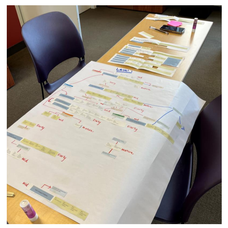
Check out the framework here!
astc.org/isl-framework

Transference Panel

In March 2023, CRE convened an expert panel (n=9 participants) to explore the transferability of the Framework and the underlying research from science and technology centers to different types of ISL environments. The transference panel focused on participants' response to work products developed under the prior funded project. During the panel, participants...

- saw both their roles and institutions in the original Framework competencies, across domains and levels.
- were able to map the original Framework competencies back to the systematically-developed competency profiles from which they were sourced.
- suggested updates to language and sequencing but generally found the content of the Framework to be understandable and appropriate.
- shared concerns similar to those identified by the project team: how to make meaning of the Framework's "levels" and the need to update language to minimize technical terms and respond to evolving ideas about equity and community.

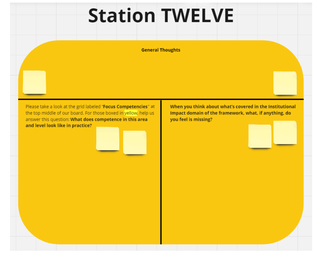




Listening Sessions

Between April and July 2023, we held eight virtual Listening Sessions with ISL professionals (n=71), recruited for diversity in job role, career level, institution type, and personal demographics. Participants provided feedback on specific sections of the Framework, shared perceptions of current challenges within ISL, and identified ideas for resources. ASTC and CRE collaborated to plan the sessions. During the sessions, ASTC facilitated conversation and CRE conducted observations.

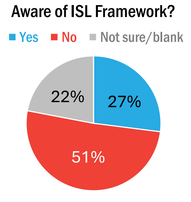
Respondents' comments focused on how the Framework might be useful, potential implementation challenges, and how the Framework might look different across job roles. Suggested support resources included concrete examples of applying competencies and tools for identifying one's own competencies. Participants indicated a need for clarity around what levels indicated and guidance for how individuals should place themselves in relation to levels. Participants also suggested ways to clarify the Framework's intended uses, which provided some guidance about how to accessibly package and share our work.



Baseline Survey of the ISL Field

In August - September 2023, SRC conducted an online survey of ISL professionals (N=630). The survey aimed to 1) explore the Framework's potential usefulness, 2) determine who is aware of the Framework, and 3) identify barriers to belonging and striving in ISL.

- The sample trended heavily towards white, highly educated, cisgender, heterosexual women. The ISL field appears to be welcoming in relation to LGBTQIA+ identity and ability status.
- Most respondents (89%) work at STEM-focused organizations. More than half have more than 10-years tenure in the field. Most respondents had not planned for a career in ISL
- More than half of respondents (57%) perform two or more roles in their organization. Respondents reported earnings below Census expectation.
- Respondents reported high self-efficacy. They were also satisfied with working in the ISL field but felt a stronger sense of belonging at their organization than in the broader field.
- Respondents reported limited access to professional learning opportunities and mentoring. Familiarity with the ISL Framework was mixed.



The FramewOrk Revisions Mini-team (FORM)

While beginning to develop support resources, we concluded that revisions to the Framework itself would be necessary to developing a suite of timely and accessible resources. The work of revision aimed to...

1. Make the suite of materials ready for asynchronous, unfacilitated use
2. Create more consistency and specificity in the competency statements
3. Identify learning pathways that stand independent of contextual factors

Two structural changes were proposed: creating more descriptive competency statements within each Framework category and relocating career "levels" to other resources (e.g., a personal reflection tool). The FramewOrk Revisions Mini-team (FORM), led by Co-PI Fisher and involving ASTC, CRE, and SRC, created a process for shared decision-making about how to make the changes. FORM deliberated over seven sessions, leveraging our collective understanding of the previous and current efforts to revise the Framework.

Original Framework
Domain: Institutional Impact
Category: Audiences

Revised Framework
Domain: Audiences & Impact
Category: Individuals, Groups, & Communities

Level 1	Level 2	Level 3
Identify intended and achieved outcomes for my area of work that align with an understanding of audiences.	Identify intended and achieved outcomes for my institution that align with an understanding of my community and of the ISL field.	Identify intended and achieved outcomes for the ISL field that align with an understanding of society and of the ISL field.

- Understand the demographics, interests and priorities of audiences.
- Develop and implement practices that expand audiences.
- Develop and sustain equitable relationships and collaborations with and across community groups and organizations.
- Shape efforts to strengthen audience experiences and address community and field-wide priorities.

With these data sources, we are now in the process of refining our core support resources.

As the Framework and resources are updated, we are exploring their usefulness and usability, individually and as a suite of materials. Some of this work will happen through targeted feedback mechanisms led by ASTC personnel, and some of it will emerge through larger studies led by CRE. SRC will conduct a follow-up to the initial survey.

Help us shape the future of our field!

We are currently looking for a diverse cadre of professionals—and aspiring professionals—to support the ongoing development of resources associated with the ISL Framework. Find us online and sign up for opportunities to participate and stay updated.

For reports and citations:
https://tinyurl.com/ISLFrameworkDocs