Professional Pathways
in **Informal STEM Learning**
Developing Career Expertise

Explore the online version and full suite of tools here.

The Framework

Professional Pathways in Informal STEM Learning (ISL)—or, Pathways for easy reference—supports professional learning for anyone in the ISL field.

From writing exhibit content to writing annual reports, leading tours to leading an organization, and studying budgets to studying visitor experiences, ISL work calls for specific skills and knowledge *and* the ability to use those skills and knowledge in a variety of contexts. This is often referred to as a *competency*, or *competencies*. The Pathways suite of tools was created by and for professionals who are doing this complex, evolving work in informal learning organizations with a STEM mission or cultural organizations with occasional STEM programs.

The Framework's competencies—organized into domains and categories—can help individuals, organizations, academic programs, and professional associations better understand and build the skills and knowledge needed in the ISL workforce.

General Expertise

How do I work with others to solve problems and accomplish our goals?

CATEGORIES OF COMPETENCIES

- Interpersonal Skills & Knowledge
- Reflective Self-Awareness
- Communication
- Problem Solving

Job-Specific Expertise

How do I understand and engage with the practices and activities of the informal STEM learning field?

CATEGORIES OF COMPETENCIES

- Professional Learning & Knowledge
- Engagement in the Profession
- Strategic Practices
- Technology-Based Skills

Operations

How do I engage with my organization's systems and structures?

CATEGORIES OF COMPETENCIES

- Organizational Structures
- Leadership & Management
- Policies, Standards, & Practices
- Resources

Audiences & Impact

How do I navigate the relationship between my organization's values and the multi-faceted communities we serve?

CATEGORIES OF COMPETENCIES

- Purpose & Role
- Individuals, Groups, & Communities
- Diversity & Equity
- Research & Evaluation

✦✧ **TIP**

Whether you're starting out or advancing your career, the Pathways can support your professional growth.

Explore the online version and suite of tools here.

astc.org/isl-pathways

General Expertise

How do I work with others to solve problems and accomplish our goals?

These competencies describe the ways you interact with your work and work environment through interpersonal relationships, self-awareness, communication, and problem solving. Most professionals continue to develop these competencies throughout their careers.

Interpersonal Skills & Knowledge

GE.1 Develop and maintain effective relationships and collaborations.

GE.2 Manage disagreements and conflict constructively.

GE.3 Express and cultivate empathy.

GE.4 Recognize and respect differences in the ways individuals approach situations or problems.

Reflective Self-Awareness

GE.5 Reflect on personal values, attitudes, and ways of thinking.

GE.6 Consider how background and experiences influence biases and motivations.

GE.7 Recognize how others perceive and react to oneself.

GE.8 Hold oneself accountable for actions and their consequences.

Communication

GE.9 Express ideas and information in a clear and compelling manner.

GE.10 Align communication approach, format, and content with audience(s) and circumstances.

GE.11 Ask clear and relevant questions.

GE.12 Demonstrate active listening skills.

GE.13 Foster inclusive and constructive group dynamics.

Problem Solving

GE.14 Approach problems with resilience and persistence.

GE.15 Identify and analyze issues, problems, and solutions.

GE.16 Consider alternative approaches to problems and practices.

GE.17 Use a variety of techniques and strategies for solving problems.

Job-Specific Expertise
How do I understand and engage with the practices and activities of the informal STEM learning field?

These competencies describe the ways you engage with the field, commit to professional learning, and strategically use your knowledge, skills, and technology in daily work.

Professional Learning & Knowledge

JE.1 Understand basic STEM content and processes.

JE.2 Understand and apply principles of informal learning.

JE.3 Monitor and be responsive to practices that inform informal STEM learning work.

JE.4 Demonstrate a commitment to professional learning.

Engagement in the Profession

JE.5 Engage with professional organizations, networks, publications, and other resources.

JE.6 Use and contribute to the knowledge base of the field.

JE.7 Represent and promote the work of informal STEM learning organizations and the informal STEM learning field.

JE.8 Strengthen workforce capacity, retention, and satisfaction.

Strategic Practices

JE.9 Demonstrate project management skills and strategies.

JE.10 Identify and understand the purpose, goals, or objectives of programs, projects, and activities.

JE.11 Align planning, implementation, and assessment of projects, products, and services with goals.

JE.12 Demonstrate reflective and evidence-based practices.

JE.13 Adjust actions and priorities to achieve desired goals, outcomes, or objectives.

Technology-Based Skills

JE.14 Maintain proficiency in relevant technologies.

JE.15 Select and use appropriate technologies for communication and collaboration.

JE.16 Consider reliability, ethics, cost/benefits, and purpose when selecting technology-based tools or platforms.

Operations | *How do I engage with my organization's systems and structures?*

These competencies describe how you contribute to the internal operations that support an organization or institution's public activities. Workplace operations vary, so the ways that professionals demonstrate and develop operations competencies will likely be dependent on position and environment.

Organizational Structures

OP.1 Understand expectations and responsibilities associated with one's position.

OP.2 Understand the purpose and functions of organizational units or departments.

OP.3 Understand and navigate internal and external management structures.

OP.4 Maintain, implement, or develop organizational protocols.

Leadership & Management

OP.5 Understand management and leadership skills and responsibilities.

OP.6 Provide vision, oversight, or support for projects, activities, or initiatives.

OP.7 Strengthen the capacity and cohesion of teams or staff.

OP.8 Promote staff well-being and satisfaction.

OP.9 Consider the broad and long-term implications of actions.

Policies, Standards, & Practices

OP.10 Inform decisions and actions with relevant policies, standards, and ethical guidelines.

OP.11 Uphold employee rights, responsibilities, and policies in the workplace.

OP.12 Maintain, implement, or develop policies, standards, and practices.

OP.13 Support and advocate for policies and practices that advance informal STEM learning efforts.

Resources

OP.14 Identify, monitor, and steward resources.

OP.15 Develop or implement strategies and practices to increase efficient use of resources.

OP.16 Understand and apply budgeting, accounting, and other fiscal management concepts.

OP.17 Select and maintain resources to promote long-term organizational sustainability.

Audiences & Impact

How do I navigate the relationship between my organization's values and the multi-faceted communities we serve?

These competencies describe the ways you align your daily work with the mission, values, and goals of your organization and understand the role of informal STEM learning organizations to engage audiences in equitable and impactful ways.

Purpose & Role

AI.1 Understand the characteristics, purposes, and distinctions between mission, vision, and goals.

AI.2 Align actions and decisions to promote the organization's mission, vision, and goals.

AI.3 Identify and respond to priorities within the field and communities.

AI.4 Monitor and be responsive to different perceptions of the changing role of informal STEM learning organizations.

Individuals, Groups, & Communities

AI.5 Understand and respond to the interests, and priorities of communities and audiences.

AI.6 Develop and implement practices that expand and enrich audiences.

AI.7 Develop and sustain equitable relationships and collaborations with and across community groups and organizations.

AI.8 Shape efforts to strengthen audiences' experiences and address community and societal priorities.

Diversity & Equity

AI.9 Understand the language, goals, perceptions, and practices associated with equity and diversity in the informal STEM learning field.

AI.10 Advocate for practices that are fair, transparent, and sensitive to potential sources of bias.

AI.11 Embed diversity and equity principles into all practices.

AI.12 Pursue actions that diversify the informal STEM learning workforce.

Research & Evaluation

AI.13 Understand the purpose and value of research and evaluation.

AI.14 Select and use appropriate research and evaluation products.

AI.15 Contribute to and support research and evaluation efforts.

AI.16 Promote research and evaluation products and processes.