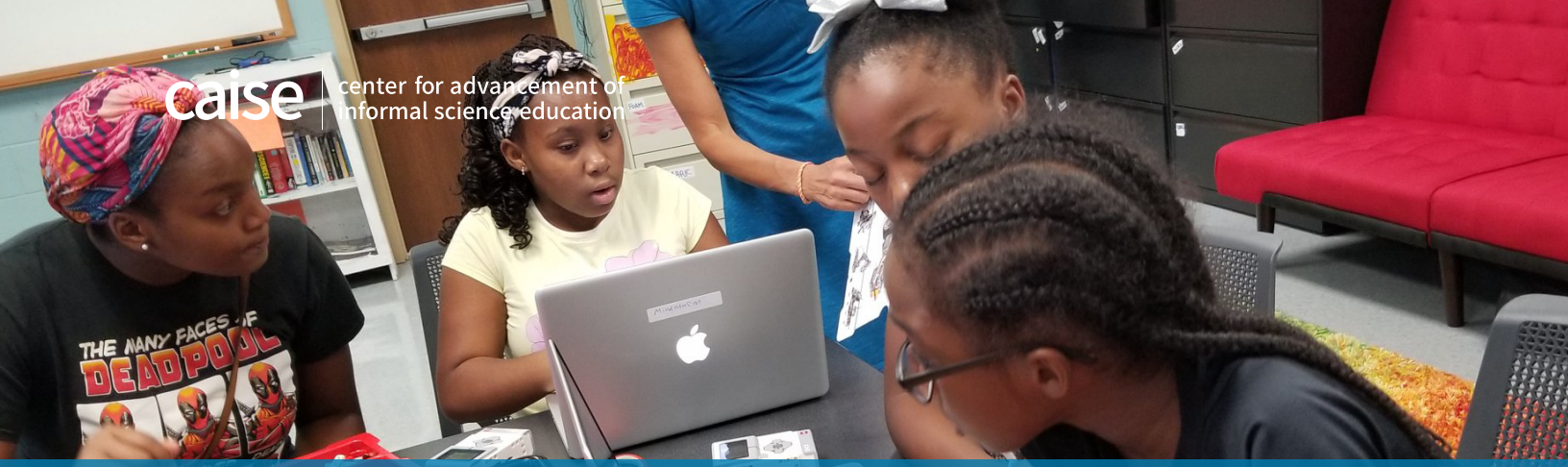

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What Does Asset-Based STEM Learning Look Like?

By Raychelle Burks and Sunshine Menezes

What Is the Issue?

Science communication is often driven by a desire to help people either to become aware of important science research, topics, and ideas or to see how science can be relevant and meaningful to their lives. Research tells us that people learn by building on their prior experiences, understandings, and world views (National Research Council, 2000). However, all social groups have different ways of communicating, interacting, and sharing meanings. They have different views of how the world works. Science communicators and educators need strategies to account for these differences in ways that position differences as strengths, rather than as weaknesses. Those who study science learning and communication have been calling for a shift away from a deficit-based model that focuses on perceived shortcomings to more asset-based models that intentionally leverage people's existing understandings and learning resources as the means for engagement.

Things to Consider

Research shows that learning and engagement in science is a cultural process (Banks et al., 2007). As people learn, they are always—consciously or not—drawing on their existing intellectual, emotional, and social resources to make meaning of new ideas. These resources for learning, or "funds of knowledge," include experiences, understandings, and ways of interacting with the world that people develop not only in school but also in their everyday home and community lives.

Deficit approaches are used when science communicators and educators inadvertently mistake differences (especially differences from their own experiences or perspectives) as the shortcomings of individuals or groups. Perceiving a lack of knowledge and understanding in the audience, science communicators focus on "fixing" the perceived "problem" rather than designing for differences in ways that recognize and build on learners' assets.

Why It Matters to You

- **Science communicators** and **STEM educators** can more effectively engage their audiences by applying asset-based approaches in their activities and strategies.
- **Professional development leaders** and **science communication** trainers can explicitly model asset-based approaches in the training they offer.
- **Funders** can encourage science communicators and informal educators to design their efforts using asset-based approaches.

Things to Consider (continued)

Asset-based approaches recognize that the everyday knowledge, experiences, and cultural practices of audience members are their resources for learning. In fact, standard educational models are designed to build on the learning resources members of dominant cultural groups bring with them to school and other settings. In seeking to broaden participation in STEM, engagement opportunities that leverage people's learning resources (or cultural funds of knowledge) as a means for productive participation have been shown to support deeper engagement.

An important step in developing inclusive science communication and STEM learning experiences is to recognize your own biases and assumptions. The most effective way to design asset-based approaches to science communication and education is to partner with the communities you hope to engage.

Reflection Questions

- **Who are your intended audiences? What do you know about them? How can you come to know them better through authentic, meaningful, community partnerships?**
- **Does your team, staff, or organization reflect the communities you wish to serve? How can you expand your team through new hiring practices or partnerships?**
- **How are you providing opportunities for your audiences to draw on their own learning resources—their everyday and cultural knowledge and practices?**

Recommended Actions You Can Take

Partner with communities to design asset-based programming:

- Build relationships with communities you seek to engage. Learn about their learning resources: their interests, concerns, ideas, everyday knowledge, and cultural practices.
- Work with trusted community members to gather programming ideas. Then co-develop and co-present scientific content and experiences.
- After presenting STEM experiences, reflect and debrief with partners to understand what works and what could be revised.

Design engagement activities using asset-based approaches:

- Draw on the audience's knowledge, experiences, and cultural practices when identifying activity goals and learning outcomes.
- Create opportunities for audience members to suggest how they can apply an activity's STEM content and ideas in ways that are relevant in their lives.
- Prioritize engagement outcomes that foster diverse STEM identities, definitions, interests, and civic engagement.

Tools You Can Use

- This short video from the US Administration for Children and Families describes the concept of Funds of Knowledge.
- These research briefs from Relating Research to Practice offer examples that can guide asset-based approaches: Communicating Science Also Communicates Cultural Orientations (brief #431) and Practitioners' Perceptions of Their Science Engagement Practices (brief #424).

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