

Belonging and Identity Cohort



Key Question:

What is the current landscape of belonging and identity in STEAM ISL?

Cohort Members:

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Definitions

- Identity: Seeing yourself as a particular kind of person (this could be a mother, father, sister, brother, science or art person, for instance) and/or as part of certain groups. Identity is complex, intersectional, and situational. People have multiple social identities, including based on their roles, their work, social groups to which they identify or are seen by others to be part of, including, but not limited to, racial/ethnic/cultural identities, gender and socioeconomic status.
- Belonging: Seeing yourself as fitting in, feeling safe and understood, having agency in a space. “Belonging” generally means the sense that one fits in, is welcomed, and is valued. It can vary from setting to setting. Belonging may unfold differently for different communities and identities.

Implications

To foster identification with STEAM, we need an approach that centers personal relevance and learner’s own cultures, lived experience, traditional ways of knowing, and concerns within supportive learning environments that are rich with material, social, and ideological resources, both relating to disciplinary knowledge and landscapes of becoming, or who a learner can be within those landscapes



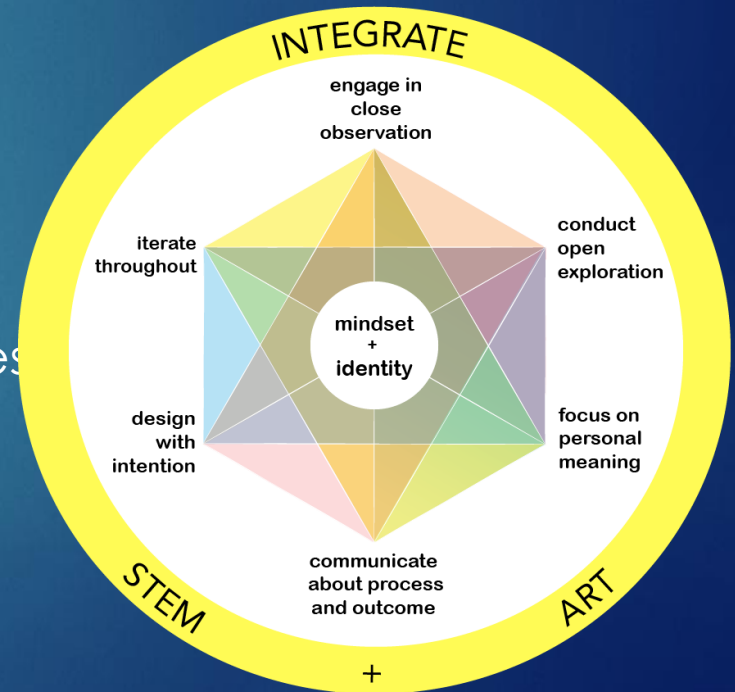
Main findings and future directions

- ▶ The conception of STEAM itself within ISL settings varies tremendously. Some use STEAM in ways that refer to the deliberate blending of art and science, or use the concept in ways that leverages frameworks of natural intersections between art and science. Others use the term “STEAM” as an overarching term to refer to work done in any one of the fields in the acronym (e.g., science OR art, etc., rather than referring to intersections).
- ▶ The literature and the field with respect to STEAM specifically (limiting this to examples where both art and STEM are featured) often invokes the concepts of identity and belonging either explicitly or implicitly. Many are equity-focused, but not all consider intersectionality in an explicit way.
- ▶ Future studies and practice should work towards creating foundational definitions of STEAM that are authentic to both the arts and STEM, considering carefully how the two might intersect and support each other. Learners' own identities and cultures should be centered in this work.

Case Study 1:

Fostering STEAM is an NSF-funded program focused on preparing ISL educators to embed a practice-based, identity-centered approach into their STEAM work with learners. It is based on a robust, integrative framework that specifies STEAM practices (below).

Project research demonstrated the fundamental importance of materials as individuals work through various meanings of STEAM and engage in the process of building personally relevant products that are the outcomes of engaging in the six practices. Materials are powerful in part because they serve as connecting points to cultural practices and histories, which is an integral part of developing disciplinary identities as part of a larger, intersectional identity. By materials, we refer to *material resources* from Nasir & Cook (2009), which includes the *stuff* of making in STEAM (construction paper, paints, etc.) and the meanings they take on in STEAM learning settings.



Case Study 2:

Building for Kids After-School Explorer Camp Programming provides hands-on, play based educational experiences for K-4 learners. The program was designed based on research that suggested that regular engagement in art and STEM activities resulted in strong gains in identity, agency, and academic performance.

Key Takeaways:

The design of these experiences should:

- Prioritize social interactions (learner to learner and learn to museum educator) in ways that build trust, connections and relationships.
- Be learner directed, making space for learners to lead and make decisions, which may lead to increased confidence and deeper engagement
- Be play-based, designed in a way that learners can find joy or enjoyment in their STEAM learning experiences.



Some Key Resources

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Lindberg L, Fields DA and Kafai YB (2020) STEAM Maker Education: Conceal/Reveal of Personal, Artistic and Computational Dimensions in High School Student Projects. *Front. Educ.* 5:51.

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Sochacka, N. W., Guyotte, K. W., & Walther, J. (2016). Learning together: A collaborative autoethnographic exploration of STEAM (STEM+ the Arts) education. *Journal of Engineering Education*, 105(1), 15-42.

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