

Failure in Making (FiM) – Supporting the Professional Development, Reflection and Learning of Informal Educators



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Background

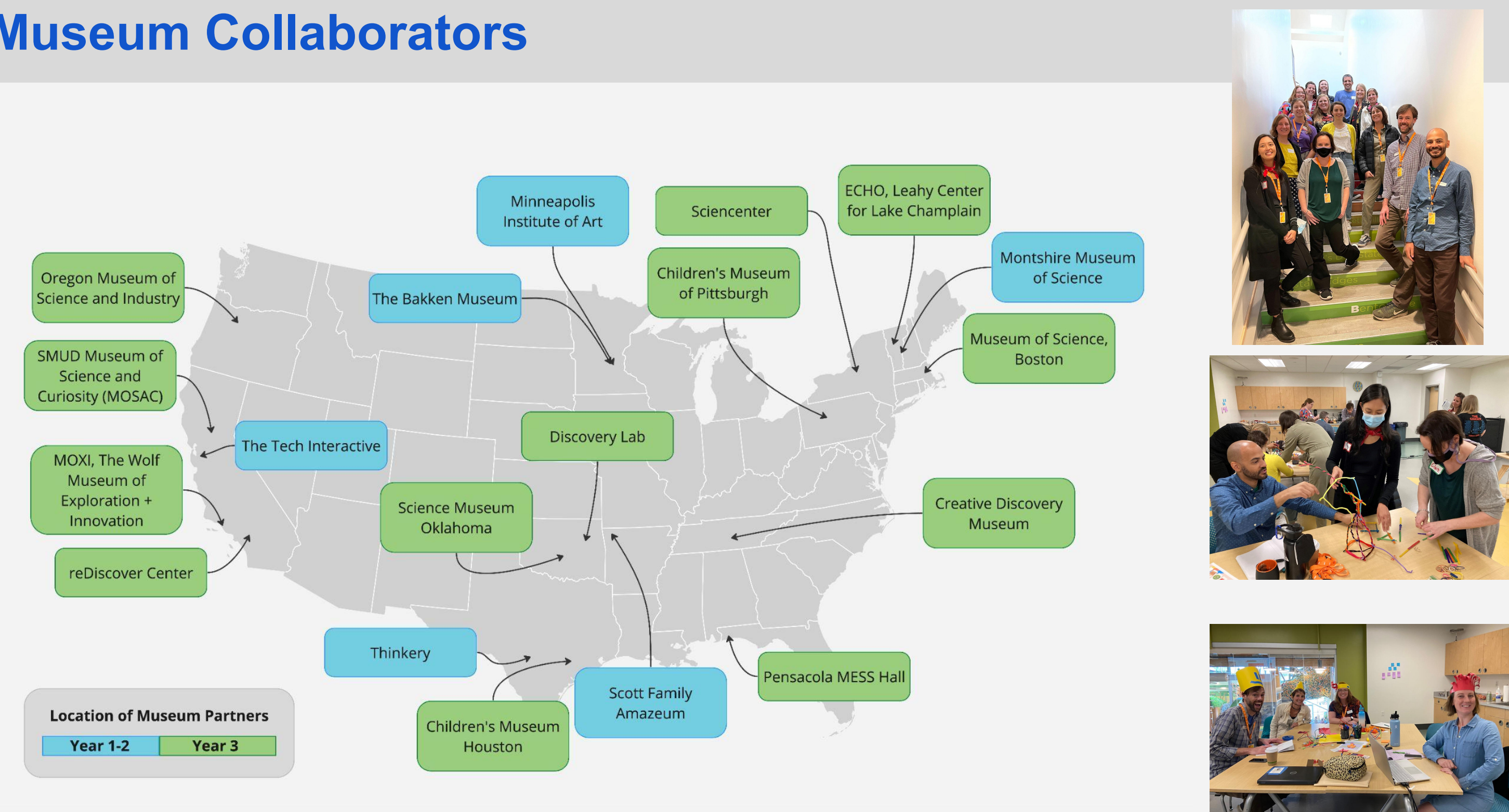
This collaborative research project brought together researchers and practitioners from six museums in Cohort 1 who met over two years to co-develop, implement and test a professional development (PD) model to support failure moments during STEAM-making activities in informal science settings. The PD program was then further tested with 13 museums from Cohort 2 in the third Year of the project.

The project focuses on failure because the important role it plays in increasing youth's persistence, motivation, self-efficacy, and agency within fields that encourage innovation and creativity. The simple definition of failure in this context is, when the outcomes of a maker experience do not meet the intentions of the maker or the task they are making.

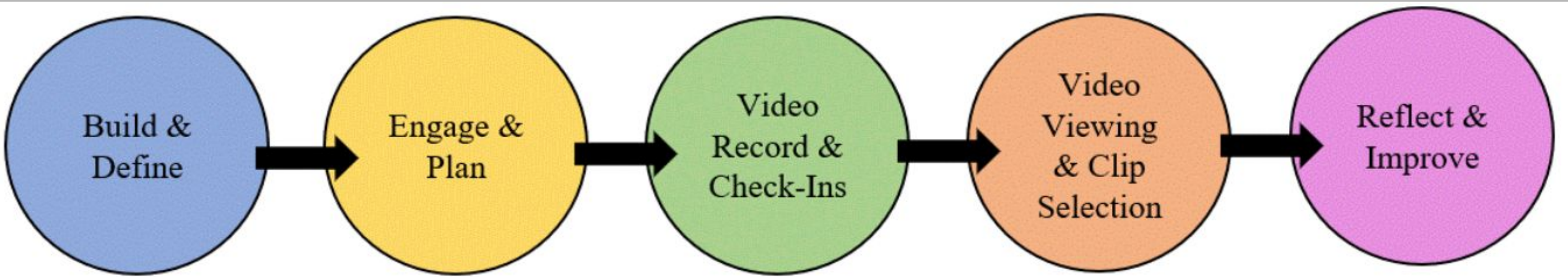
Research Questions

1. What features of the PD do the project team, lead facilitators, and informal educators consider most effective for positively shifting their pedagogical practices around youths' experiences with failures in making programs?
2. To what extent did the PD and associated learning activities achieve the impacts identified for each target audience?

Museum Collaborators



Research Approach



The **objective** of the research was to adapt, implement, and refine a PD program focused on supporting informal educators' instructional practices on ways to plan for and respond to youths' experiences with failure. The aim was to have a positive impact on developing participants' pedagogical practices around failure, as well as developing youths' affinity for resilience during making tasks and a strong sense of self as a maker.

Key Features of the PD

- Adaptable 'Make It Your Own' Model
- Educator as Active Learner
- Embedded in Pedagogical Frameworks
- Supports a Culture of Reflective Practice
- Collaborative Learning Community

Preliminary Evaluation Findings

- Findings suggest that the PD program is empowering museum partners as educators and researchers and is offering an effective model for sustained practice.
- Feedback from interviews with informal educators suggest a shift in pedagogical practices as a result of the participation in the PD. Educators see the following impact on their practice:
 - Gained shared understanding and common language
 - Increased awareness about failure and what to look for regarding moments of failure
 - Gained empathy for the learner
 - Increased knowledge and intentionality about effective failure practices
 - Gained self-efficacy
 - Shift towards more positive view of failure
 - Became more reflective practitioners as a result of participation in the project

Challenges & Lessons Learned

- Global pandemic - shift in approach to a web-based format
- Significant staff turnover in some museums; different needs of seasonal staff
- Data collection from youth at partnering sites was logistically challenging
- Technical issues and logistics around videotaping

Quotes

*The word that is coming to mind is, **we are empowering our educators to then empower their campers.** And, somehow that frame is so much more productive than "I don't know how to fix it. So I'm bad." It's like, no, no. This is about failing forward. It's about saying it out loud that this is gonna happen. We are looking for it. And here are strategies to get out of it.* (Year 2 Lead Facilitator)

***I learned new techniques and I have more knowledge** of what to do in those kinds of situations.* (Year 2 Informal Educator)

I definitely started thinking about it more while I was teaching, like noticing my language around it and how I react and noticing the student reactions a little bit more since we just talked about it. I just started kind of paying attention a little bit more to that particular aspect of the field trip lab. (Year 2 Informal Educator)

Our department is now planning to use video recordings as part of our ongoing training (giving/receiving feedback) for selves and seasonal staff. (Year 3 Lead Facilitator)

Related Research

- Anderson, A., Goeke, M., Simpson, A., & Maltese, A. V. (2019). Where should learners struggle? *Connected Science Learning*, 1(12). [\[ARTICLE\]](#)
- Maltese, A., Simpson, A., & Anderson, A. (2018). Failing to learn: The impact of failures during making activities. *Thinking Skills and Creativity*, 30, 116-124. [\[ARTICLE\]](#)
- Simpson, A., Anderson, A., & Maltese, A. V. (2019). Caught on camera: Youth and educators' noticing of and responding to failure within making contexts. *Journal of Science Education and Technology*, 28(5), 480-492. [\[ARTICLE\]](#)



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