

FOSTERING STEAM

Professional development in equity-based art-science integration



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Framing the problem

Many informal learning institutions are experimenting with STEAM approaches to engage diverse learners. However, what STEAM means, including how to design and enact STEAM experiences, is undertheorized.

We are offering a PD series for informal educators that centers around a set of core STEAM practices that support identity work among learners. The series involves in-person sessions, online training, and team coaching during the design phase.

Why this approach?

Activating interest and personal relevance sets youth on a path for developing life-long science engagement. We also know that youth become extremely self-critical of their own art around late elementary school age, and can stop participating as a result. Our STEAM practices can quiet the “inner negative voice” and allow youth to fully engage. Our STEAM model stresses supporting STEAM identity work through:

- Allowing opportunities for agency & choice
- Positioning learners as emerging experts
- Reflecting on how STEM and art connect to everyday life
- Using STEAM practices
- Connecting STEAM to learners’ everyday lives and cultural practices

Example of practices in action: Painting with Chemistry

Science concepts:
acid and base chemical reactions; color indicators

Open exploration:
curiosity-driven “messaging around” to explore learner questions



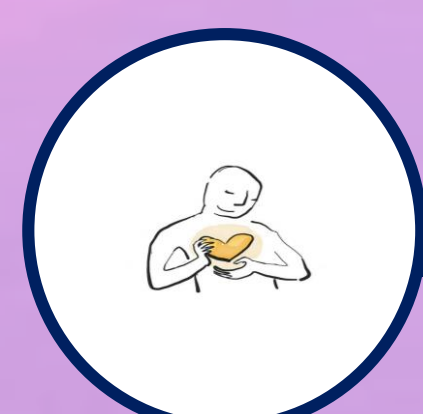
Design with intention:
creation of color palette through chemistry experimentation



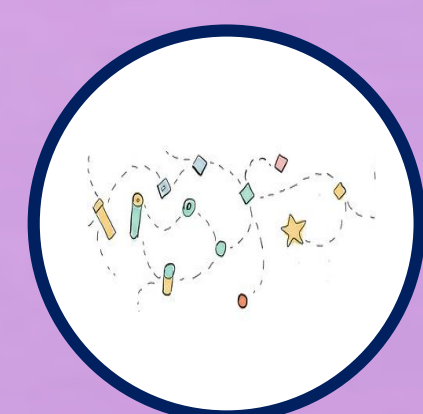
Core STEAM Practices



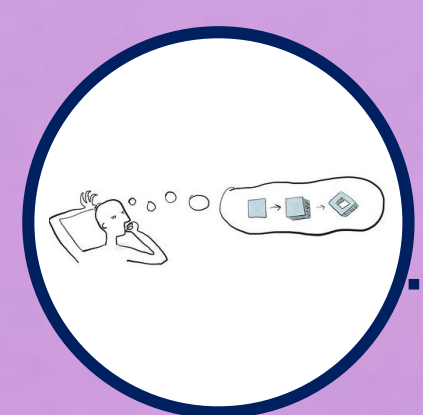
1) Leverage STEM concepts to create artwork



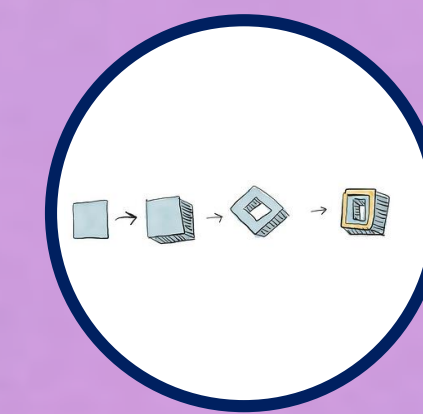
2) Focus on personal meaning



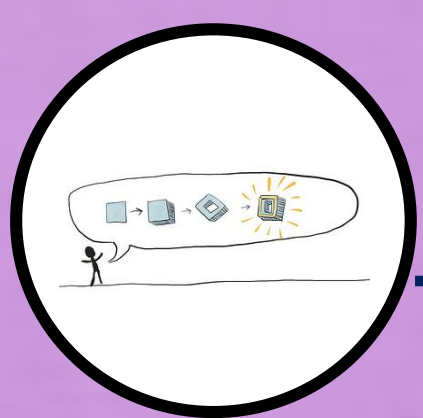
3) Conduct open exploration



4) Design with intention



5) Iterate (through several drafts, prototypes, or models)



6) Communicate about process and outcome

Personal expression:
learner directed content and composition

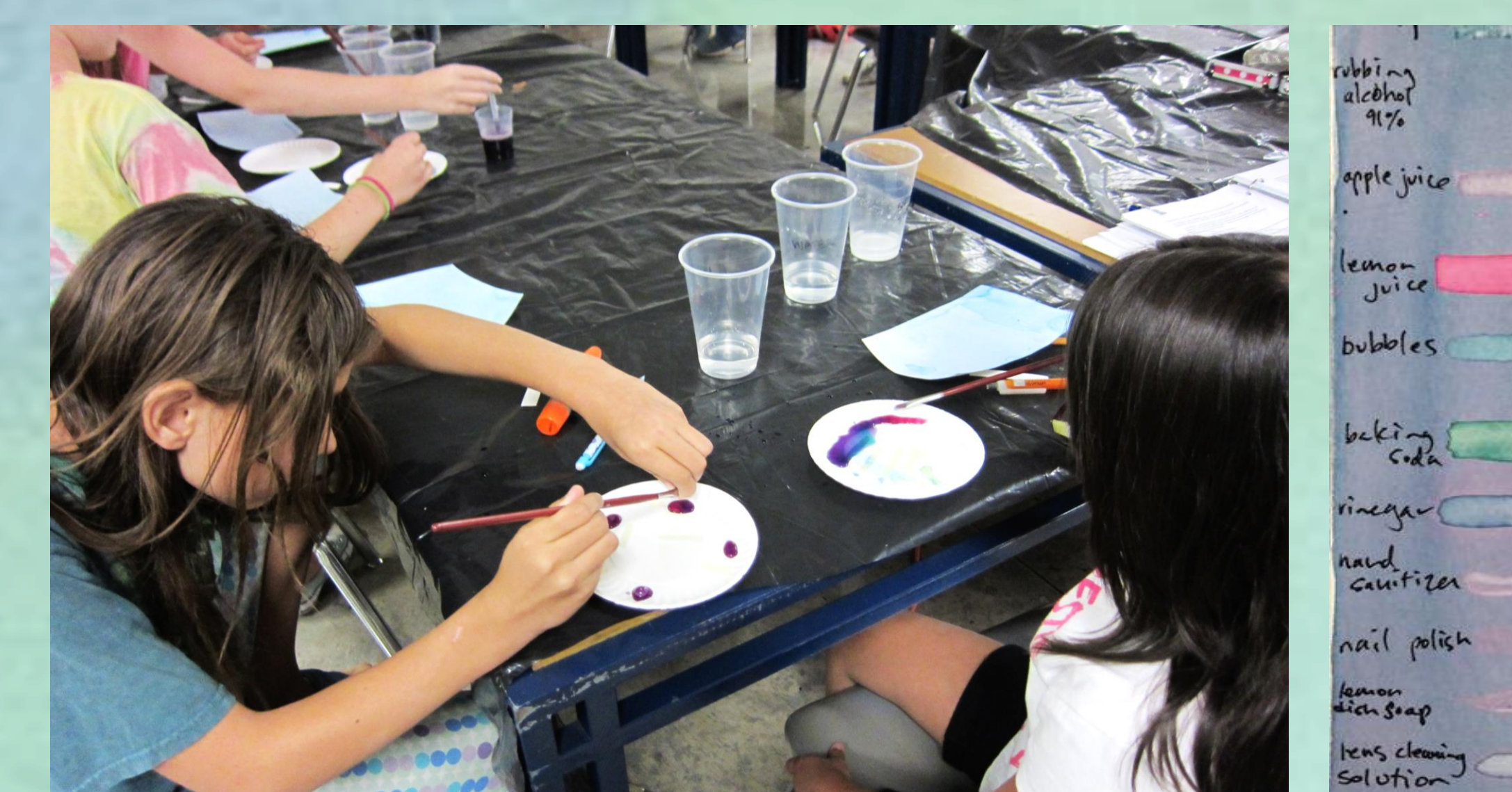


Iteration: results and process inform new choices

Communicating process and outcome: presentation and feedback to peers

Outstanding questions/challenges

- We are working with a variety of ISL institutions. Question: Can one PD model fit the needs of multiple ISL practitioners/institution types?
- What are the best methods for supporting educators to move through the whole PD series?
- How can we support educators in a complex system to design and implement STEAM programming?



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