

Failure+Making = Learning?

A Workshop for Researchers and Evaluators



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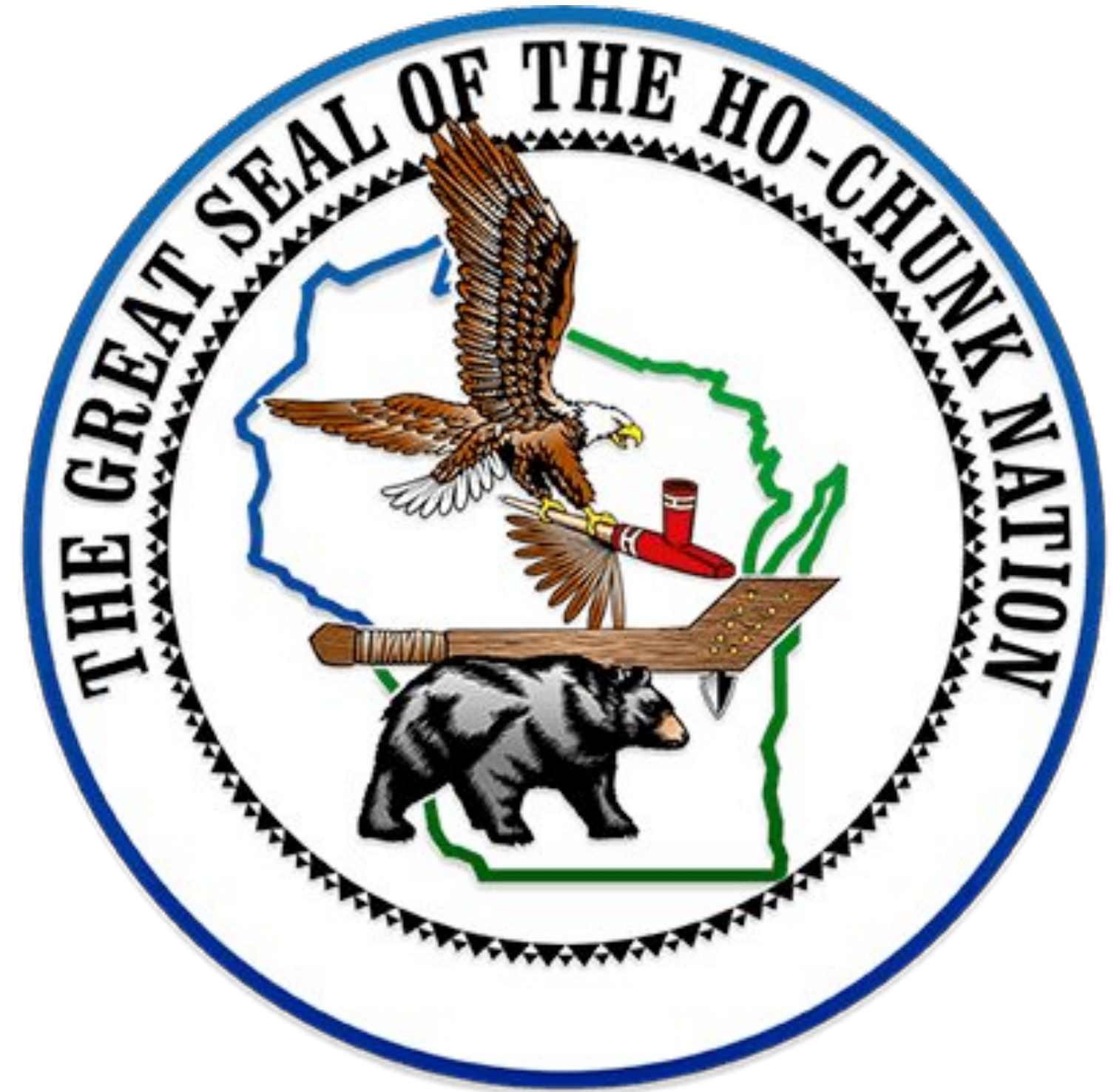
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Acknowledgement of Failures



Origins....and today

Project Origins

- We started with observations of kids making
- Began to take notice of tinkering/iteration
- Researching STEM interest and began hearing from engineers and CS people talking about importance of failure and debugging
- Our group began to think about potential role failure could play in learning and how common/rich these experiences are in making

Today

- Experiencing Failure Firsthand
- Background on failure research
- Getting dirty with failure data
- Trying to make sense of best ways to learn from failure

We define
failure as...

*When
something
doesn't work
as intended.*





FLOPPY TOWER

An activity modeled after one created by Amazeum

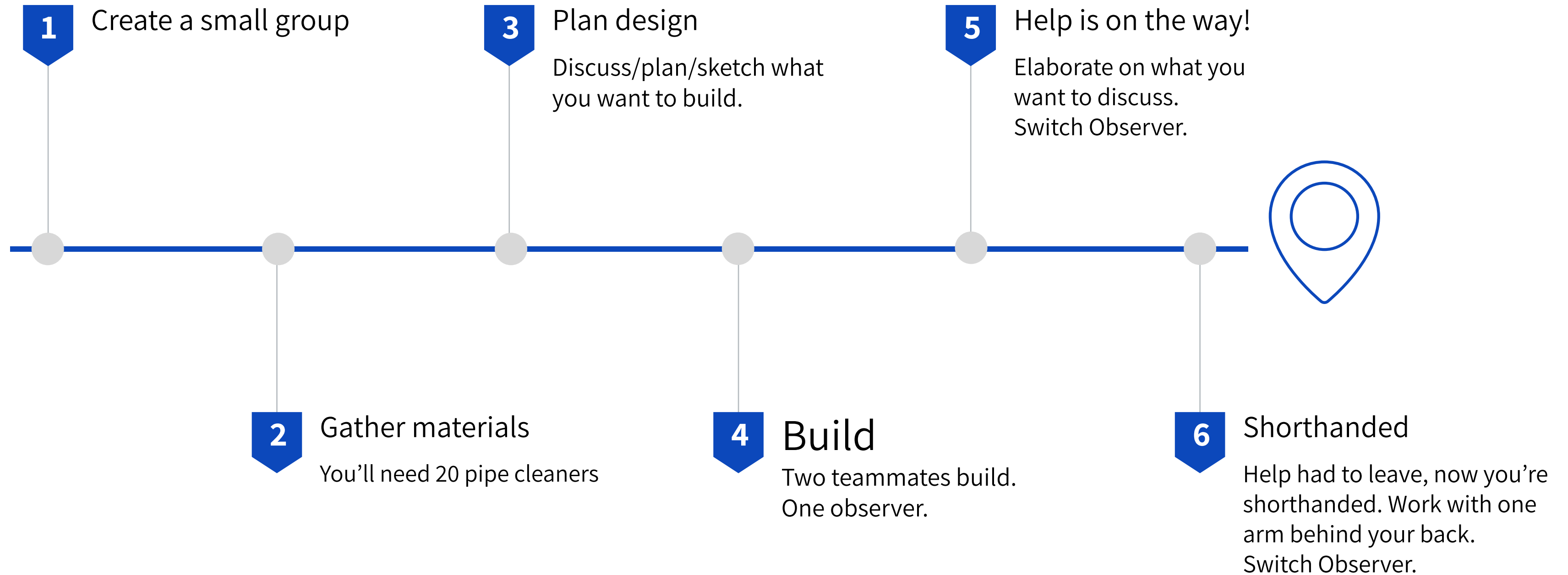
Floppy Tower

- How does each of us think and feel about failure?
- Are there differences based on our positionality?
- What role does fun/enjoyment play in how failure is experienced?



Floppy Tower

Goal: To build the tallest freestanding tower you can





Let's Celebrate Our Failures!!!

Debrief - Discuss within Group



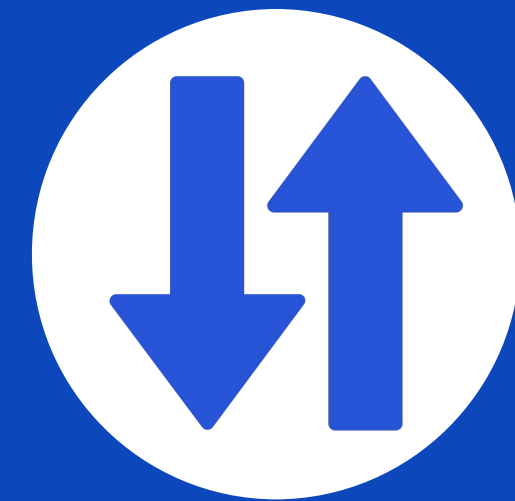
Emotions

Describe what you see/feel > How do we label these things?



Perspective

How are labels similar/different from kid/educator perspective?



Impact on Data

How will these ideas impact the data you generate as a researcher? How might you make sense of these as a researcher or evaluator?

BREAK TIME

A group of four diverse people (three men and one woman) are gathered around a table, looking at a laptop screen. Their hands are stacked in the center of the table, symbolizing teamwork and collaboration. The image is overlaid with a semi-transparent blue filter.

RESEARCH

A quick overview of failure related research

Topics

Art Design and Failure

Achievement, Performance and Failure

Causes of Failure

Creativity and Failure

Emotions about Failure

Engineering and Failure

Failure in General

Instructional Strategy/Intervention and Failure

Maker Education and Failure

Mathematics and Failure

Parenting and Failure

Science Education and Failure



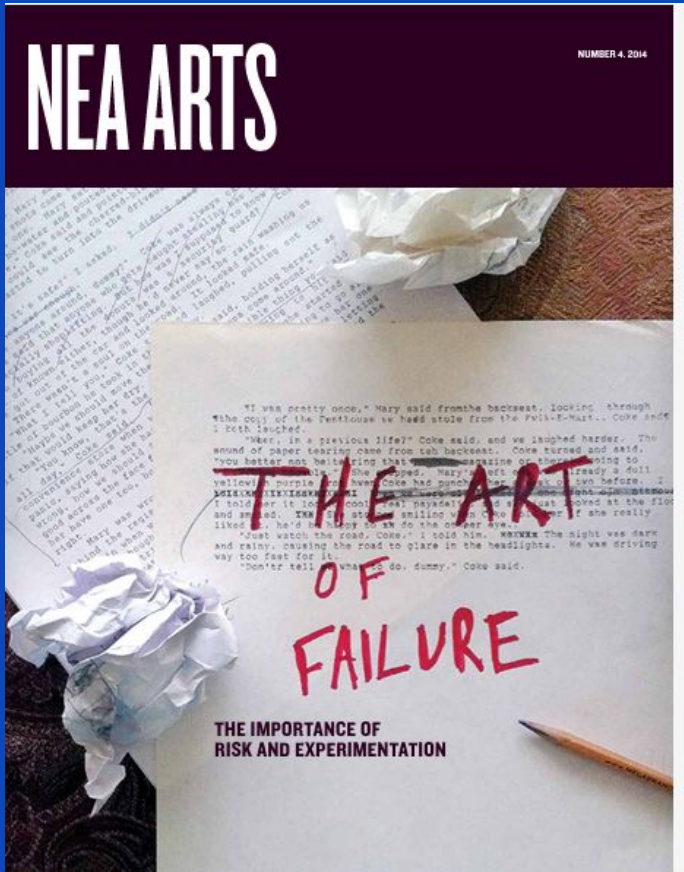
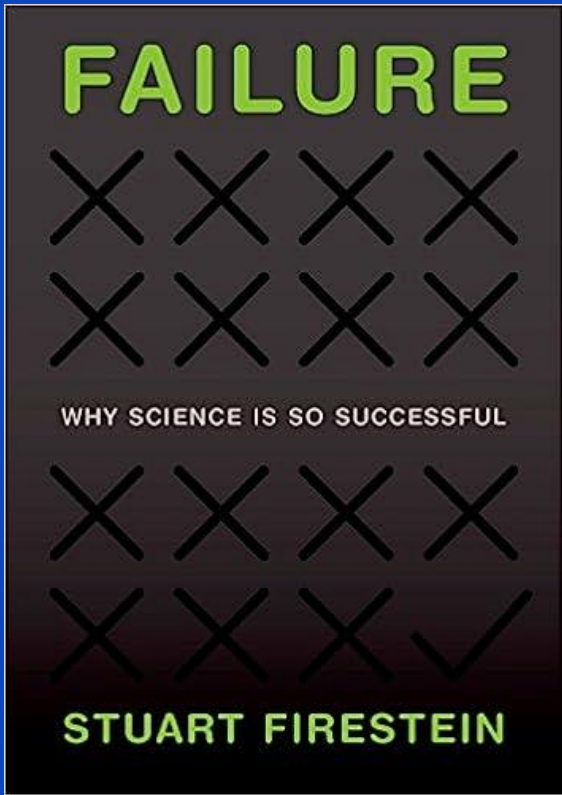
Related Research



Paul Feigenbaum, FLORIDA INTERNATIONAL UNIVERSITY, pfeigenb@fiu.edu

Telling Students it's O.K. to Fail, but Showing Them it Isn't: Dissonant Paradigms of Failure in Higher Education

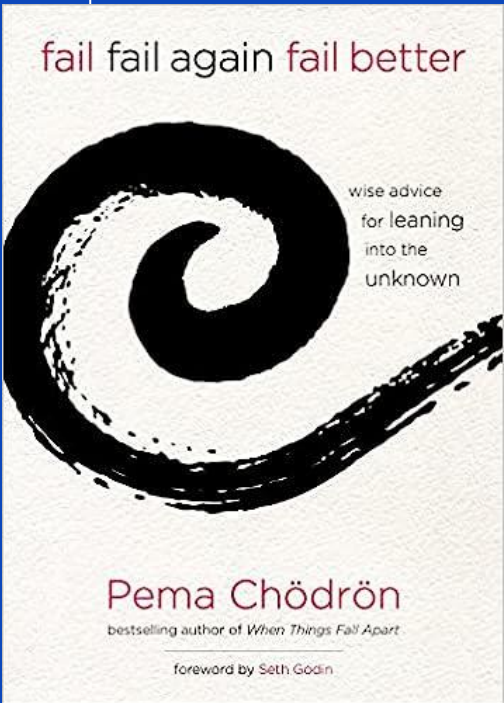
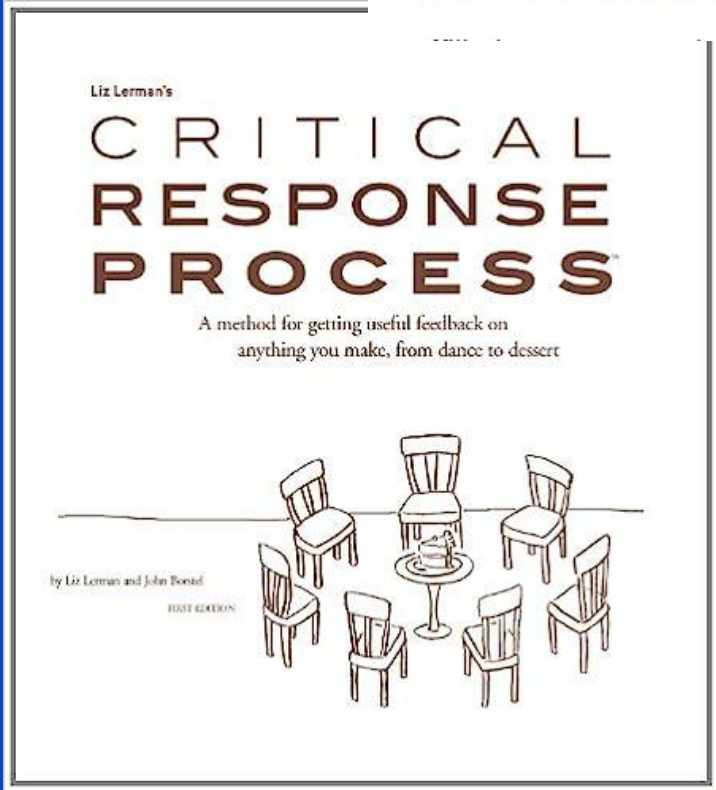
ABSTRACT
Educators increasingly extol failure as a necessary component of learning and growth. However, students frequently experience failure as a source of fear and anxiety that impedes risk-taking and experimentation. This essay examines the dissonance between these



> Ann Behav Med. 2017 Jun;51(3):348-355. doi: 10.1007/s12160-016-9857-x.

Linguistic Evidence for the Failure Mindset as a Predictor of Life Span Longevity

Ian B Penzel¹, Michelle R Persich², Ryan L Boyd³, Michael D Robinson²



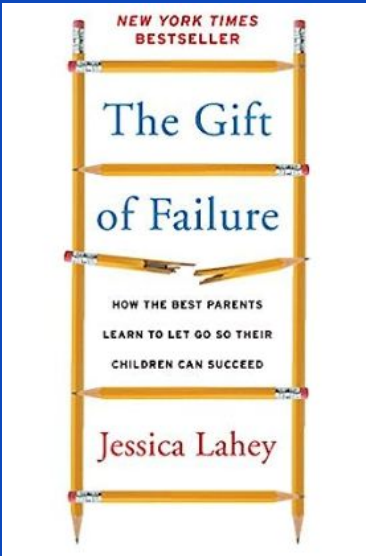

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Reframing "Failure" in Making: The Value of Play, Social Relationships, and Ownership

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Corrigendum

Corrigendum: What Predicts Children's Fixed and Growth Intelligence Mind-Sets? Not Their Parents' Views of Intelligence but Their Parents' Views of Failure



Psychological Science
1
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www.psychologicalscience.org/PS
SAGE

Related Research

[See our Resource page on our website!](#)

Our Prior Research

- Youth experience failure in making differently and not entirely negatively. Follow youth's lead on how they use the word
- Embracing open-endedness, iteration and flexibility helps to position potential failures as more “friendly”
- Maker educators already have many strategies for supporting youth to persist. These can be shared, adapted, and adopted by others. However, having no plan isn't helpful.
- Talking about failure (or struggle, mistakes, challenges) before, during, and after making helps learners process the experience.



https://www.nsf.gov/awardsearch/showAward?AWD_ID=1623452

Embracing open-endedness, iteration and flexibility helps to position potential failures as more “friendly”

Flexibility: The variety of possible end points within the activity

Scale: The perception of how macro or micro a failure or mistake is as it relates to the end goal of the product

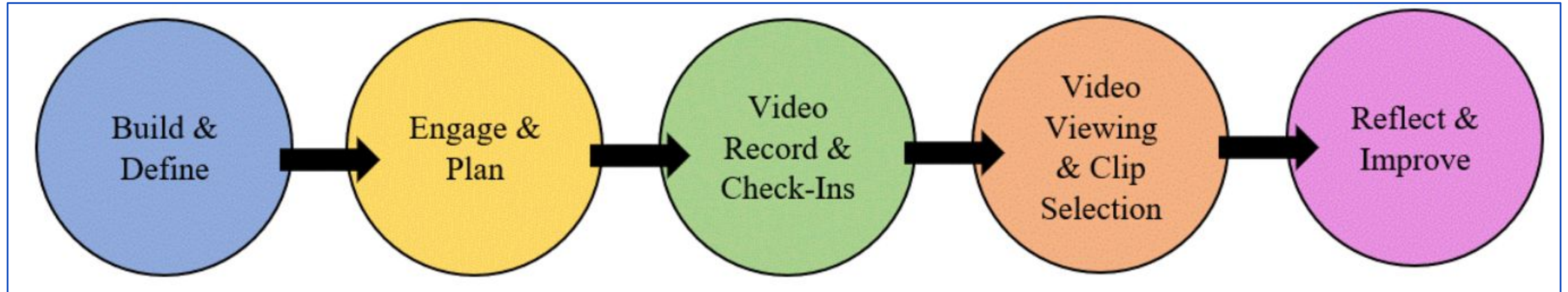
Finality: The ability to change, modify, or keep working on a project/product

Materiality: The availability, variety, and features of materials

Facilitator influence: The ways in which a facilitator supports or inhibits the features above

[Where should learners struggle? *Connected Science Learning*](#)

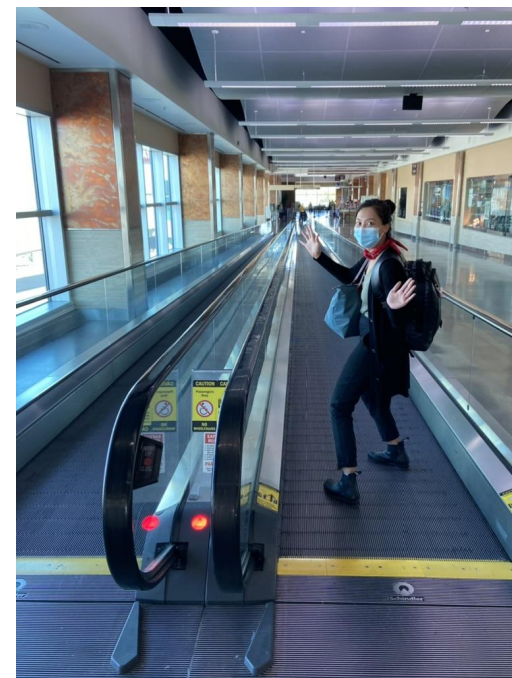
Current Research



The **objective** of our research is to adapt, implement, and refine a professional development program focused on supporting informal educators' instructional practices on ways to plan for and respond to youths' experiences with failure will 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.

https://www.nsf.gov/awardsearch/showAward?AWD_ID=2005927&HistoricalAwards=

Communities of Informal Educators





FAILURE VIDEOS

Video 1 - Afterschool Maker Club



Sensemaking

What did you notice?

Anything in here look familiar?

Any aspects you view as more productive? Less productive?

Video 2: Watch for...

Time 1: Watch and try to focus specifically on the student

Time 2: Watch and try to focus specifically on the educators

Video 2 - Afterschool Maker Club



Sensemaking

Discuss in your group

Did it feel different from different perspectives?

Any aspects you view as more productive? Less productive?

Video 3: Watch for...

Group 1: You are responsible for designing this activity and are reviewing the video to see how well the activity is working for participants.

Group 2: You are working to develop trainings for your staff about facilitating making activities, particularly material choices.

Video 3 - Afterschool Maker Club



Sensemaking

Part 1 - Individual reflection

What do you notice?

What feelings do you sense from the learner(s)?
educator(s)?

Who is doing most of the talking? Making?

What flavors of failure/struggle/challenge do you see?

Sensemaking

Part 2 - Plan

Take a few minutes to sketch out a plan for how you would review this video with your staff to squeeze the most learning out of this clip. Come up with some specific questions you would ask.

Part 3 - Act

Discuss your plans with partner/group

- Where did your ideas align/differ?
- What questions did you come up with?
- What would you change? Why?

Video 4: Watch for

Your Education Team is involved in a project where the focus is on helping to support learners through failure. You pop in to one of their activities and see this. Think about how you'd provide them feedback.

Video 4 - Library Making



Sensemaking

What did you notice?

What feedback would you give the Ed team based on this?

A group of four diverse people (three men and one woman) standing in a circle, holding hands, with a blue overlay.

How did that feel?

Thoughts/Questions?

Things we've learned along the way



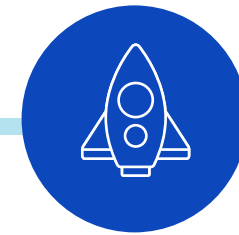
Critical to give educators space for failure emotions

Elaborate on what you want to discuss.



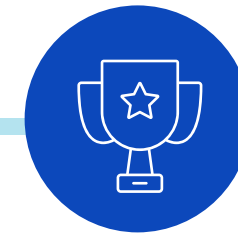
Shift in focus

Focus was on co-developing with CoP and shifting to assisting in the current PLC.



Data can be a four-letter word

Better to focus on what they see and hear as informing practice.



Eyes on the prize

Important to remember that our project is about how educators can best support youth through failure.

QUESTIONS?

PLEASE FEEL FREE TO REACH OUT

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