BSCS SCIENCE LEARNING

UNIVERSITY OF MINNESOTA

Transforming Science Education Through Research-Driven Innovation

STeLLA Online

Redesigning STeLLA to Increase Reach

DRK-12 PI Meeting 2021

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The Effective PL Program that Is Being Scaled

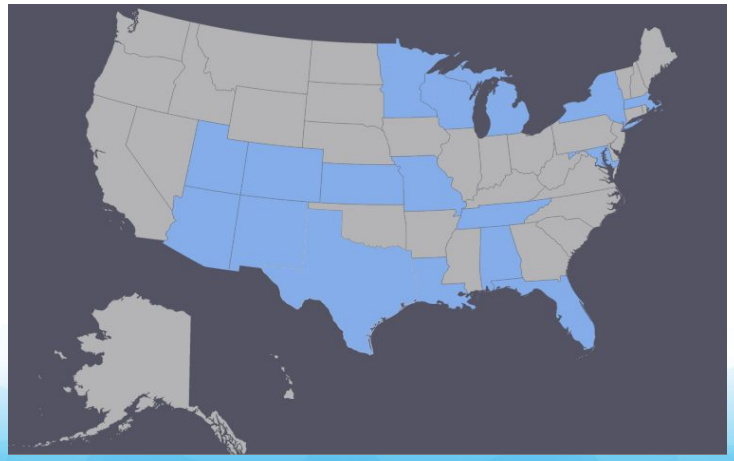
- STeLLA (Science Teachers Learning From Lesson Analysis)
- Video-based, analysis-of-practice, year-long PL for elementary teachers

Overview

- Why STeLLA Online?
- What is STeLLA Online?
- Design features of STeLLA Online

Why STeLLA *ONLINE*?

- Eliminates all travel costs (no flights, food, hotel)
- Increases accessibility for
  - teachers in tiny rural districts
  - teachers with summer jobs
  - teachers with small children
- Increases accessibility for teacher leaders
- More equitable access to STeLLA PL



What makes STeLLA Online, STeLLA?

- **STeLLA design principles***
  - We adhere to all design principles
  - Focus on three in this presentation:
    - **Integration** of science content, curriculum, and pedagogy
    - **Collaborative learning**
    - **PL facilitation and leadership development**

*Roth, Bintz, Wickler, Hvidsten, Taylor, Beardsley, Cain, Wilson, (2017). Design principles for effective video-based professional development. *International Journal of STEM Education, 4*(31), p. 1 - 24.

What STeLLA Online *ISN'T*

- Not "do it yourself"
  - Requires a facilitator
- Not a correspondence course
  - Requires group work
  - Requires intensive online interaction

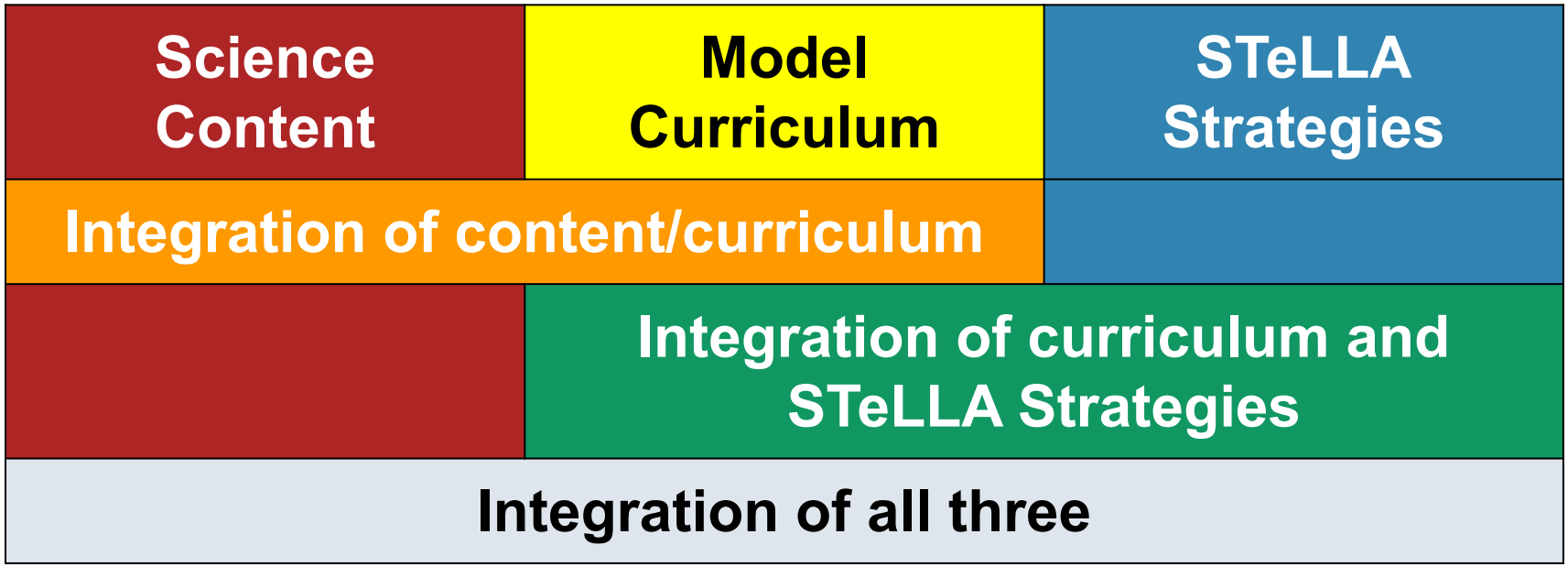
STeLLA vs. STeLLA Online

- Same total duration (~90 hours)
- Intensive summer experience (both)
  - Concentrated (face to face)
  - Spread out (online)
- Video analysis of own classrooms in Fall (both)
- Lesson development in Winter (both)

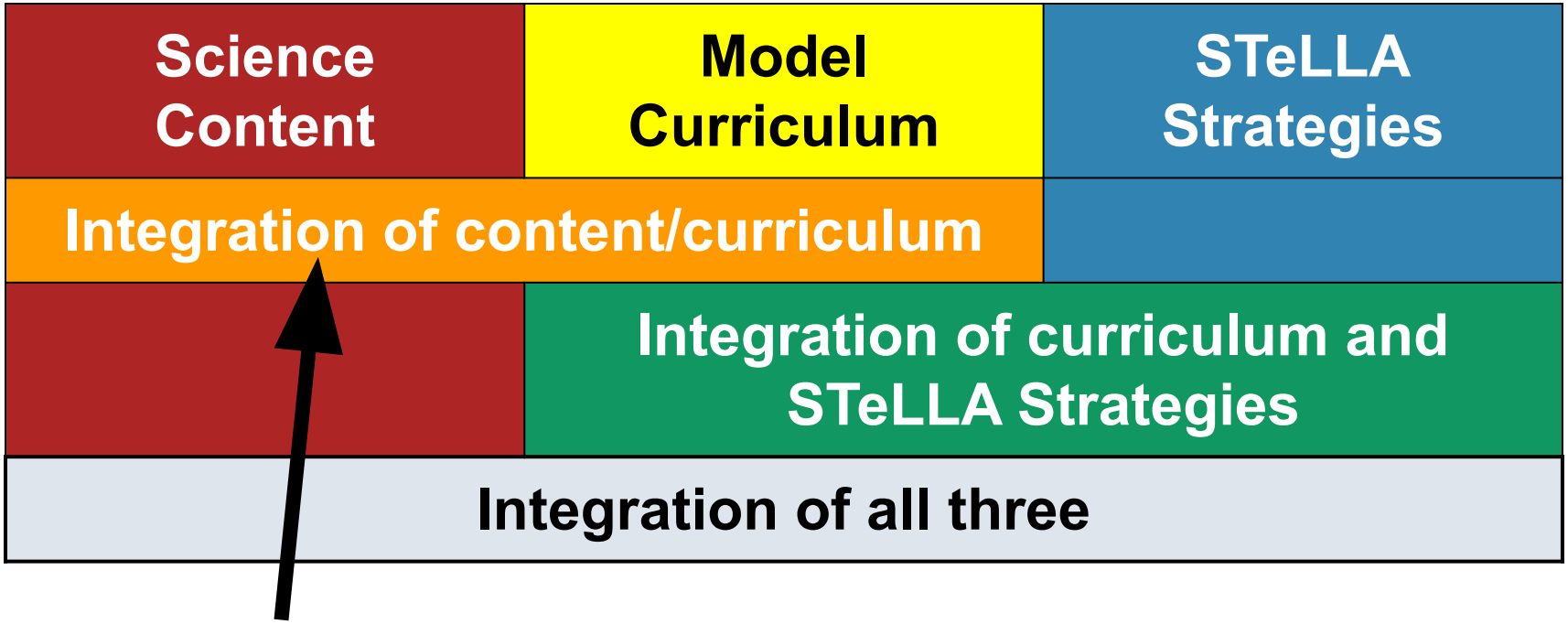
Question #1

How do we preserve the integration of science content learning with other elements of STeLLA in the online environment?

STeLLA Design Principles: 5, 6, 7
Integration of Learning Experiences

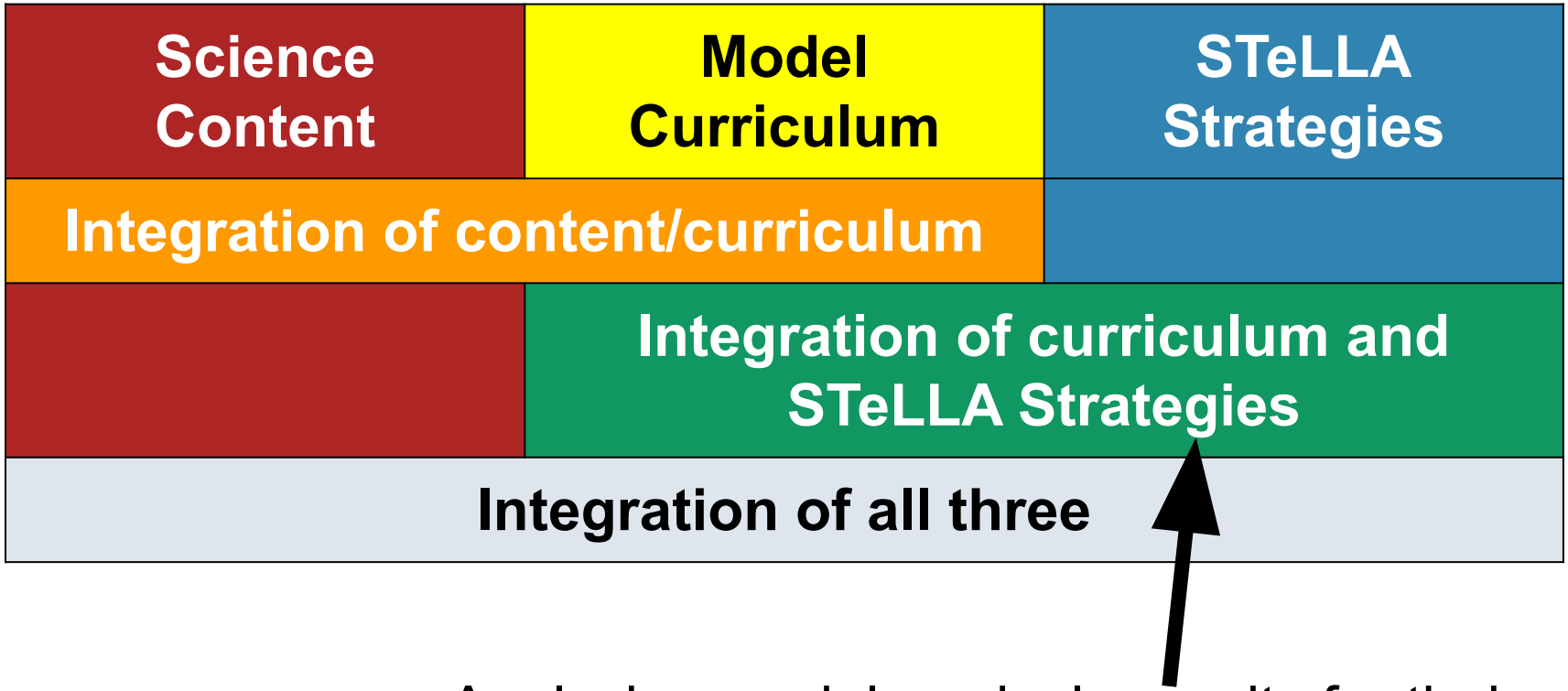


Design Principles: 5, 6, 7
Integration of Learning Experiences



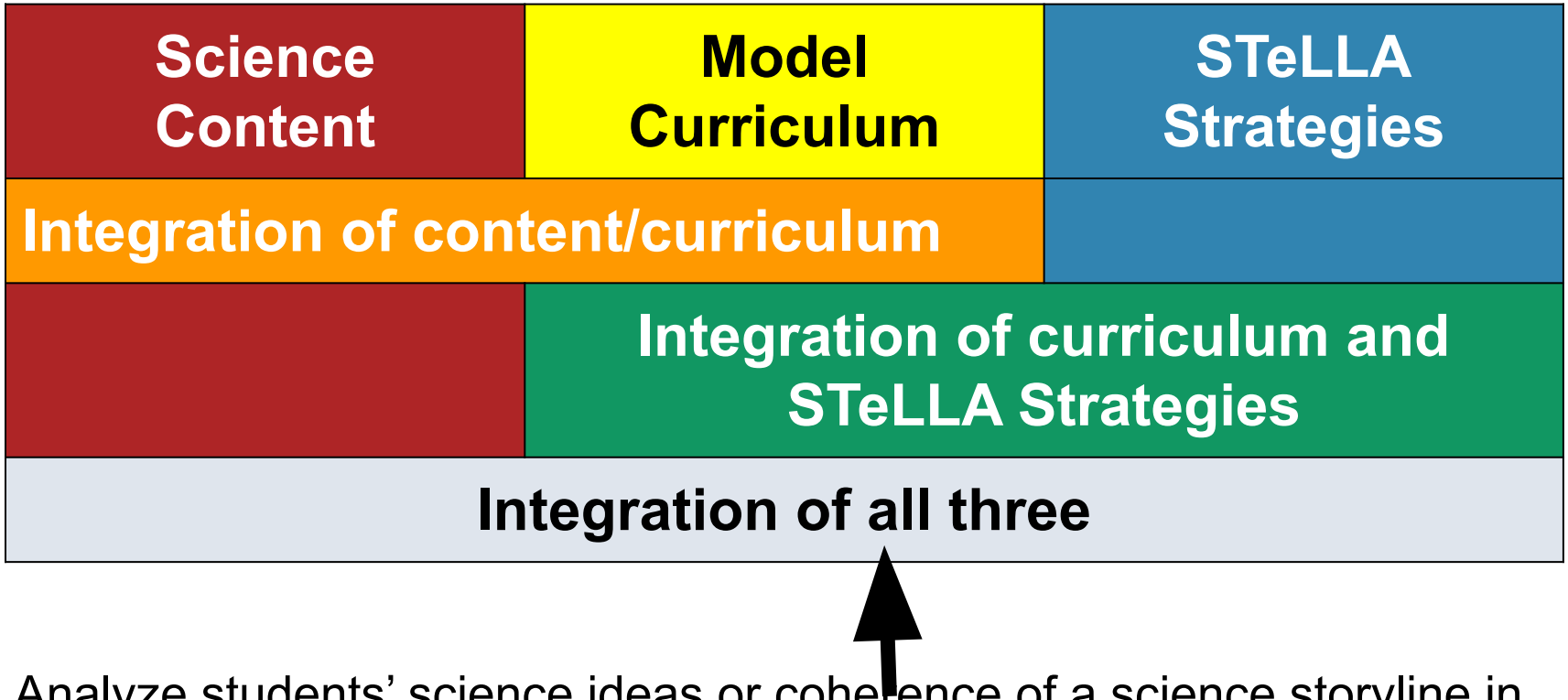
Engaging as learners using science activities that are closely matched to experiences of students in model curricula.

Design Principles: 5, 6, 7
Integration of Learning Experiences



Analyzing model curriculum units for their use of STeLLA Strategies.

Design Principles: 5, 6, 7
Integration of Learning Experiences



Analyze students' science ideas or coherence of a science storyline in video as surfaced through STeLLA strategies as students engage in model units.

Consistent 5-Part Module Structure (Asynchronous)

1. **Learn focal strategies.** Read about 2 or 3 strategies, engage in asynchronous discussion, and submit copies of STeLLA Strategies Summary Table.
2. **Engage in science.** Engage in curriculum-based science activities (matched closely to model lesson).
3. **Analyze video.** Analyze video of teacher using focal STeLLA strategies while teaching model lesson.
4. **Use and apply.** Teachers consider how they might use the focal strategies to teach science ideas related to the model unit and submit a Canvas assignment or engage in an asynchronous discussion.
5. **Reflect.** Reflection on science content (driving question board), strategies, and relationship between strategies and lenses.

Consistent 4-Part Synchronous Session

- Check-in (How are you doing, really? ~15 to 20 minutes each synchronous session)
- Discuss strategies
- Analyze videos showcasing curriculum, science ideas, and focal strategies
- Discuss science ideas in greater depth

Question #2

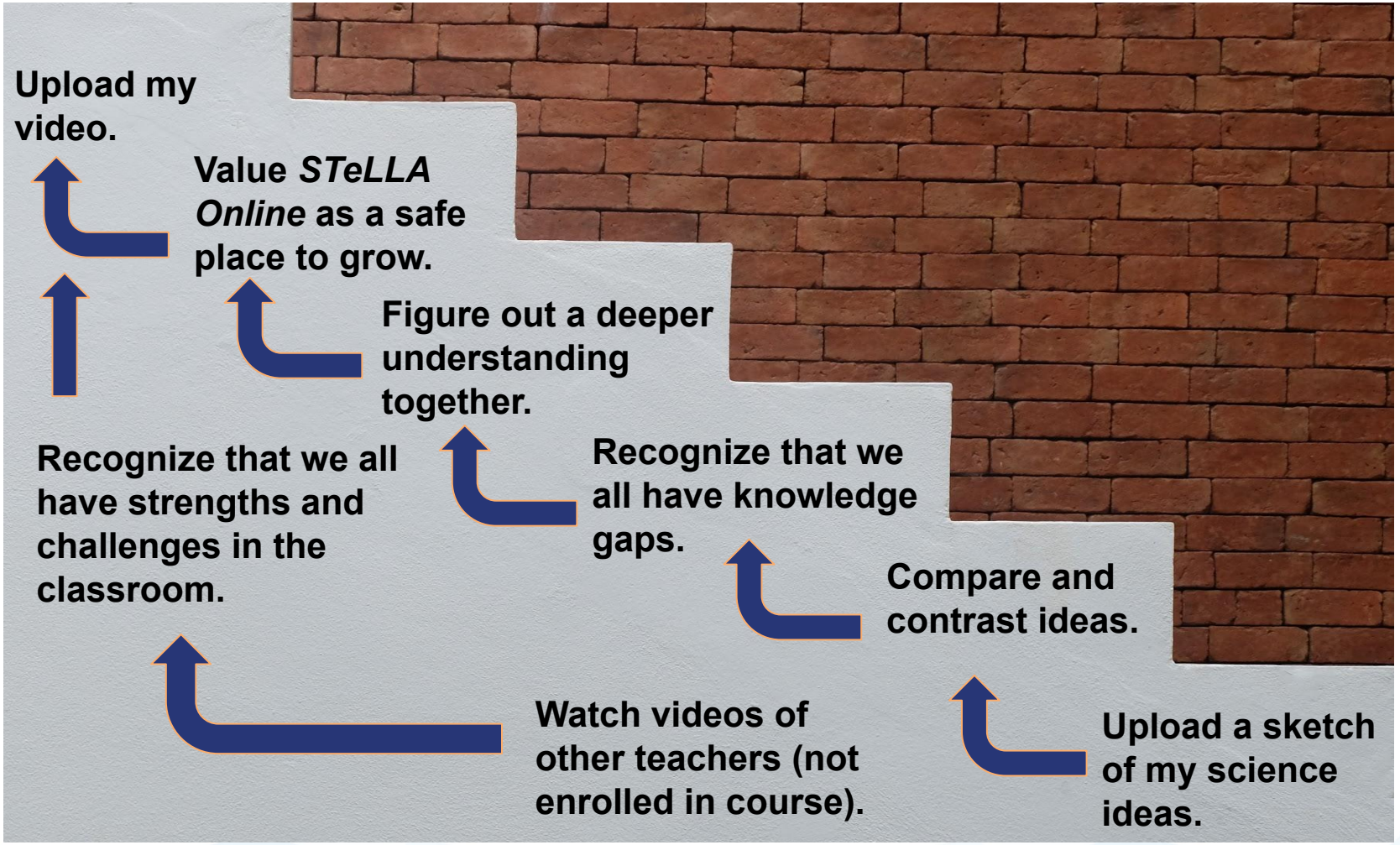
Can we create a collaborative environment that allows teachers to critically engage with one another (be constructively challenging)?

How we created online community

Gradually building community and trust

- Informal conversations
- Initially opening oneself up in lower risk ways to be vulnerable in **asynchronous work**
- Later, **opening oneself up to be vulnerable in synchronous work**

Stair Stepping into Openness and Vulnerability



Question #3

How do we facilitate and develop facilitators for STeLLA Online?

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How do we **facilitate** STeLLA Online?

Role of Facilitator: Face to Face vs. Online

- Reactive in face to face PL
- Proactive in STeLLA Online
  - precious little synchronous time;
  - facilitator needs to come in with a great idea of where challenges lie and what participants fully understand to make the best use of synch time.
- Used generative “crux” questions to uncover common areas of difficulty
  - Science crux questions
  - Pedagogical crux questions

Question #4

How do we **develop facilitators** for STeLLA Online?

Leadership development

- Includes real side-by-side facilitation learning
- Much more coaching in real time (based on asynchronous responses between synchronous sessions) than is humanly possible in face to face
- Tacit is made explicit

Summary

STeLLA Online attended to three STeLLA Design principles:

- Integration
- Collaboration
- Facilitation

Results from quasi-experiment to examine impact are coming!

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