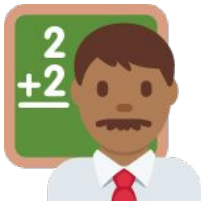
Improving Interactive Instruction:

Faculty Engagement Requires Starting Small and Telling All

Bailey Kacsmar

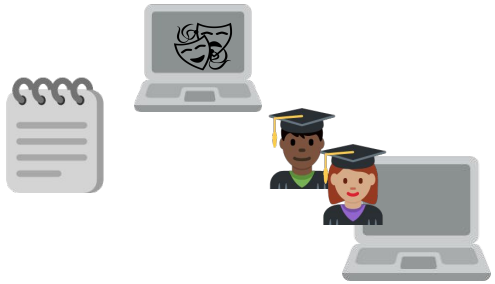
UNIVERSITY OF WATERLOO

A Divide



Current Computer Science Education Practices

Computer Science Education Research Innovations



Interactive Instruction Innovations

One-minute reflections

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Software theater

Interactive Instruction Innovations

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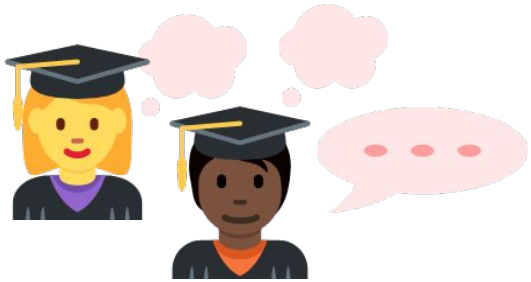
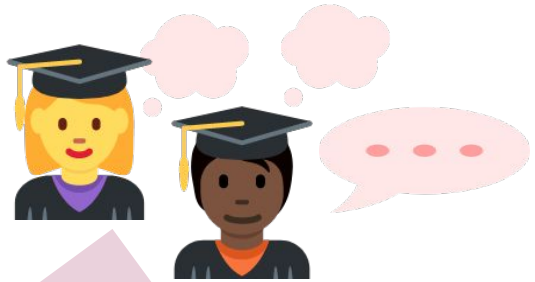


Think-pair-share

Interactive Instruction Innovations

Jupyter Notebooks

Polling



Case Studies

Or ate reflections

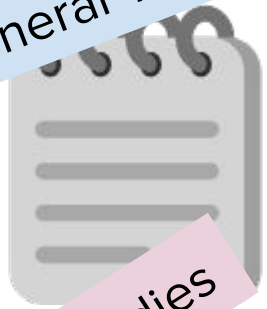
Software theater

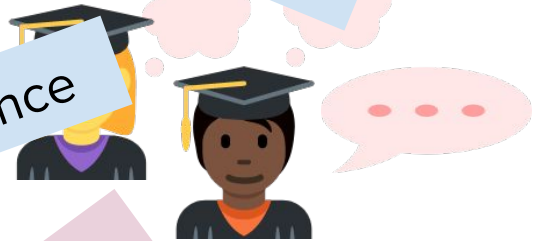
hink-pair-share

Workshops

Flipped Classroom

Interactive Instruction Innovations





General Topics

Jupyter Notebooks

Polling

Security

Artificial Intelligence

Case Studies

Algorithms

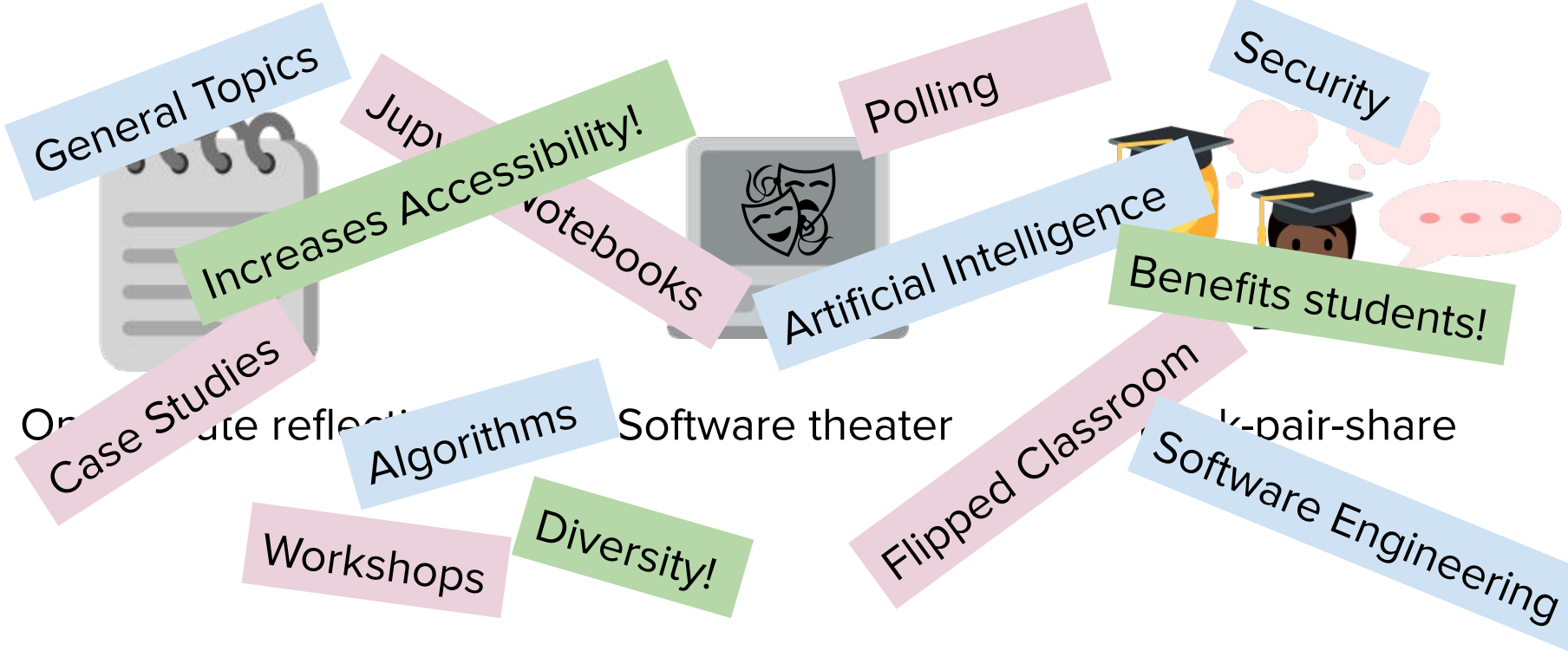
Software theater

Flipped Classroom

Software Engineering

Workshops

Interactive Instruction Innovations



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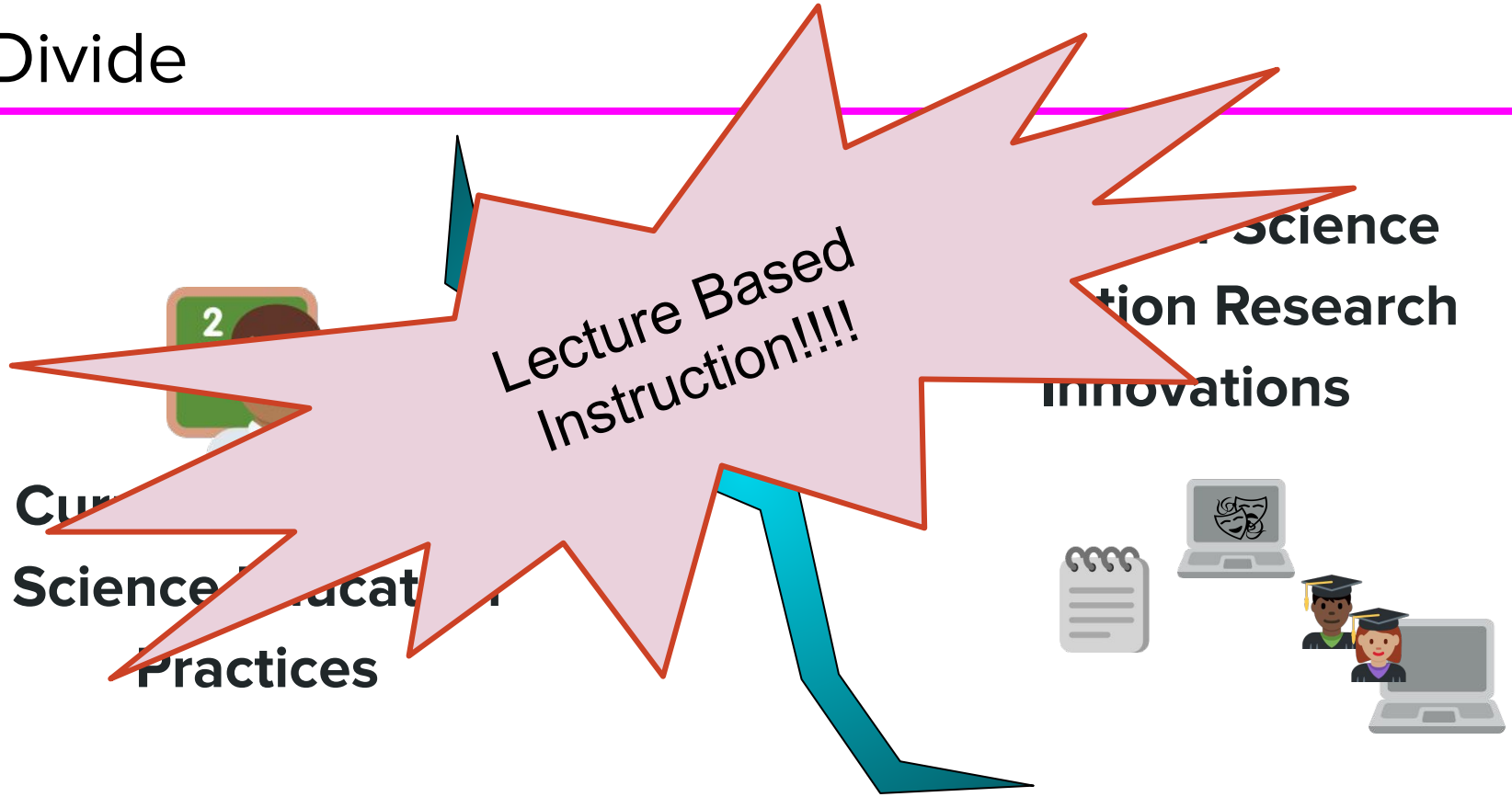
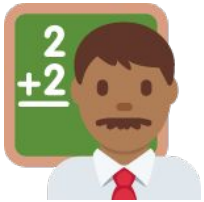

Lecture Based Instruction!!!!
Science
tion Research
Innovations
Practices

Barriers in the Divide



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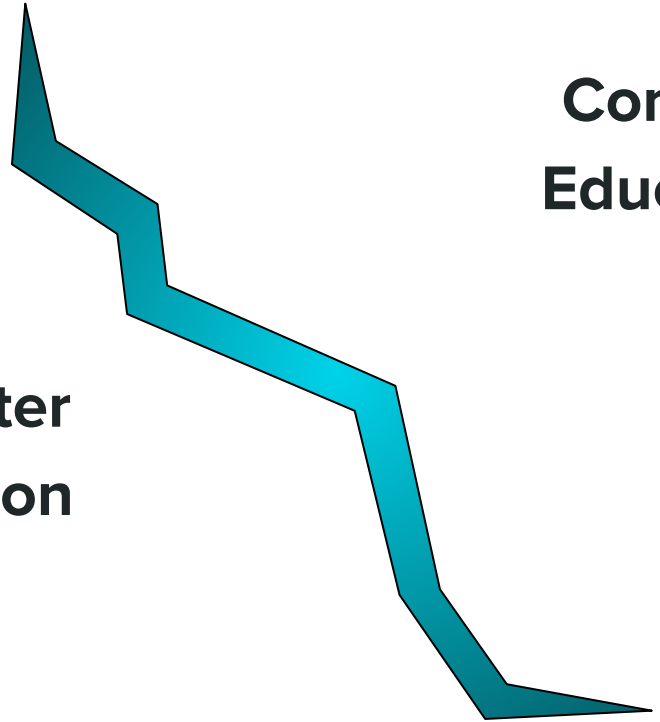
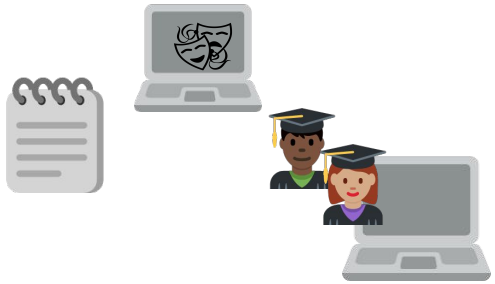


Computer Science Education Research Innovations



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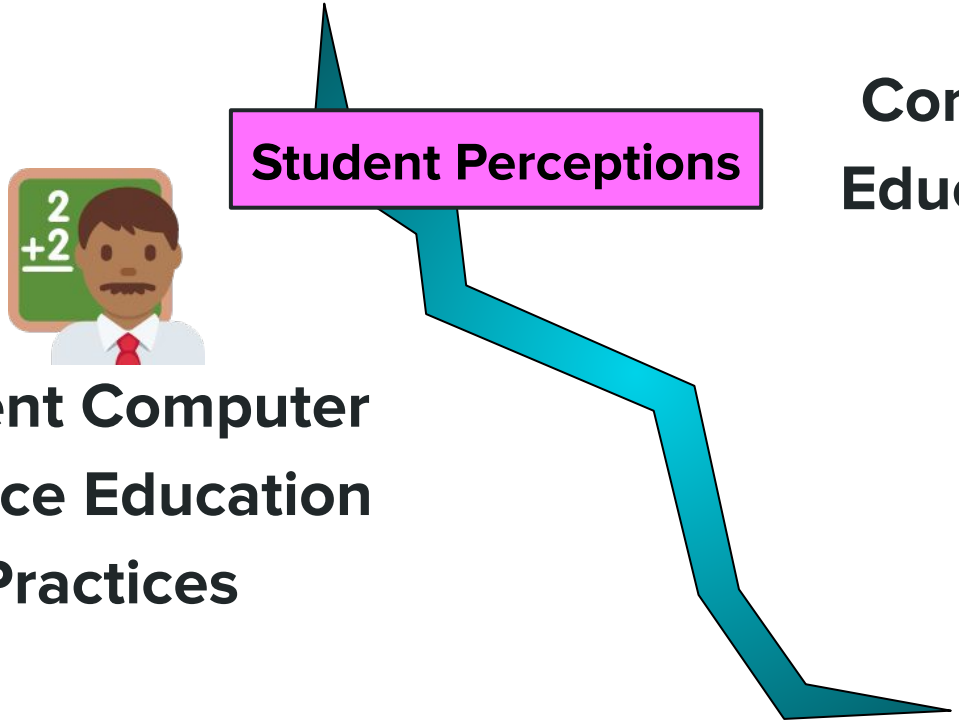

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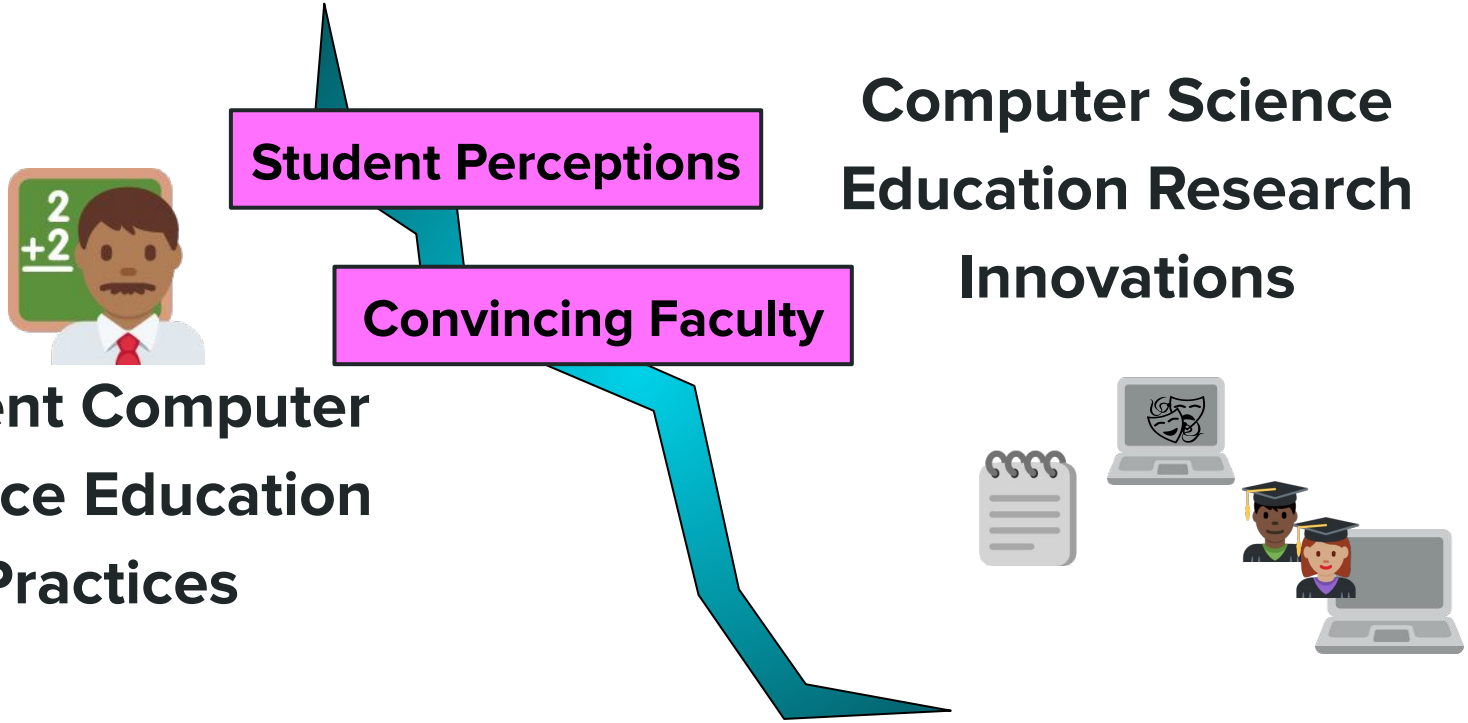

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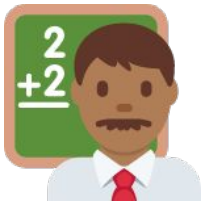


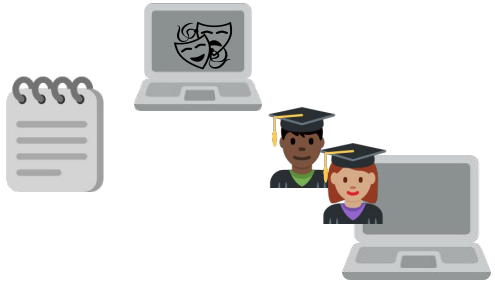
Current Computer Science Education Practices

Student Perceptions

Convincing Faculty

Accessibility

Computer Science Education Research Innovations



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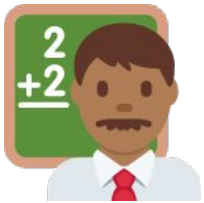

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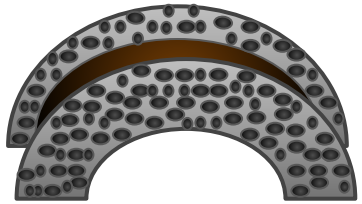
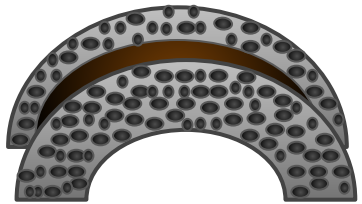
Now what?



Let’s build a bridge!

Two Main Goals for Building a Bridge

- Improving the accessibility of education innovations
- Identify a path to propagate innovations from researchers to practitioners



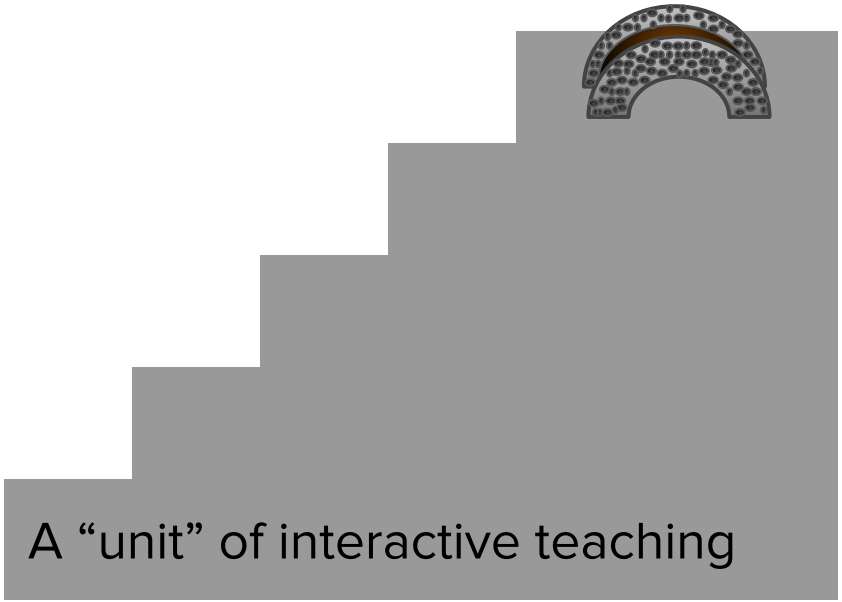
Steps Towards a Bridge

Small Teaching

J. M. Lang. 2016. Small teaching: Everyday lessons from the science of learning. John Wiley & Sons.

Steps Towards a Bridge

Small Teaching



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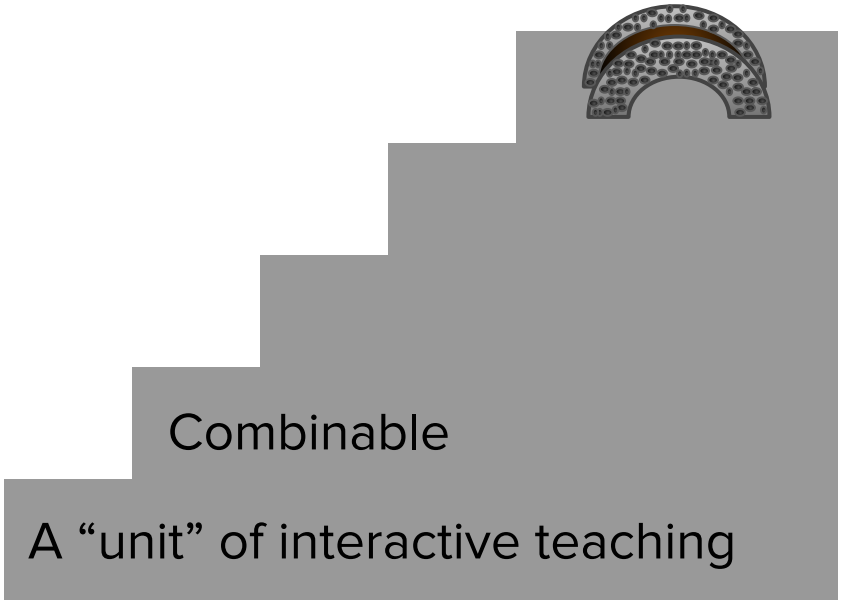

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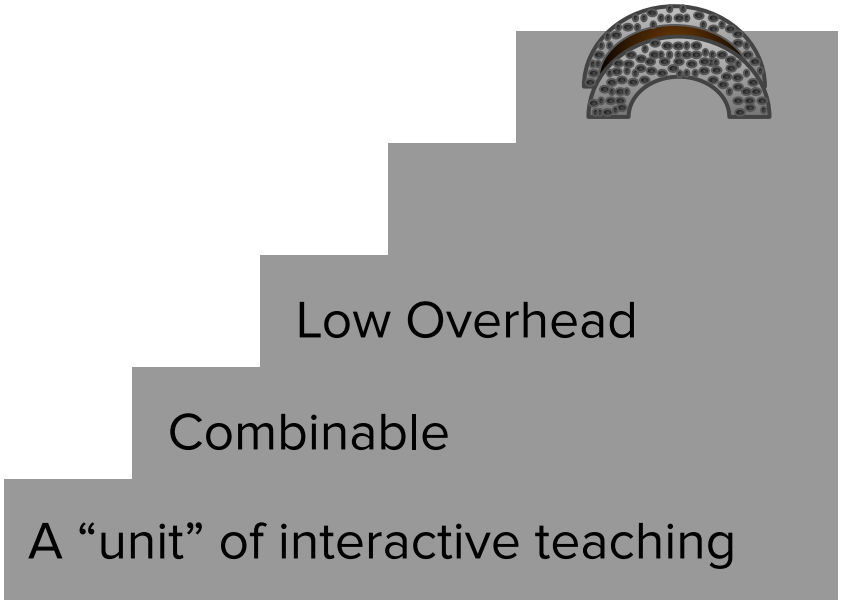

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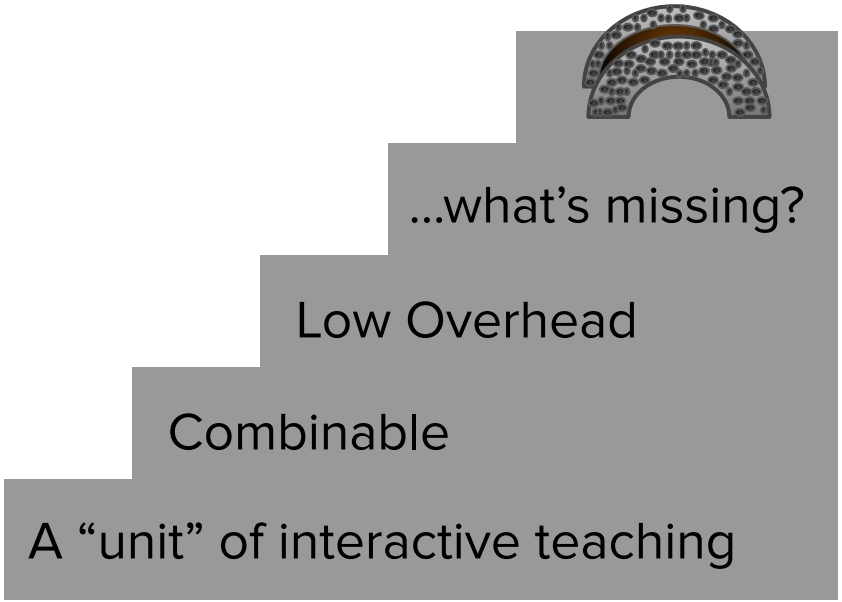

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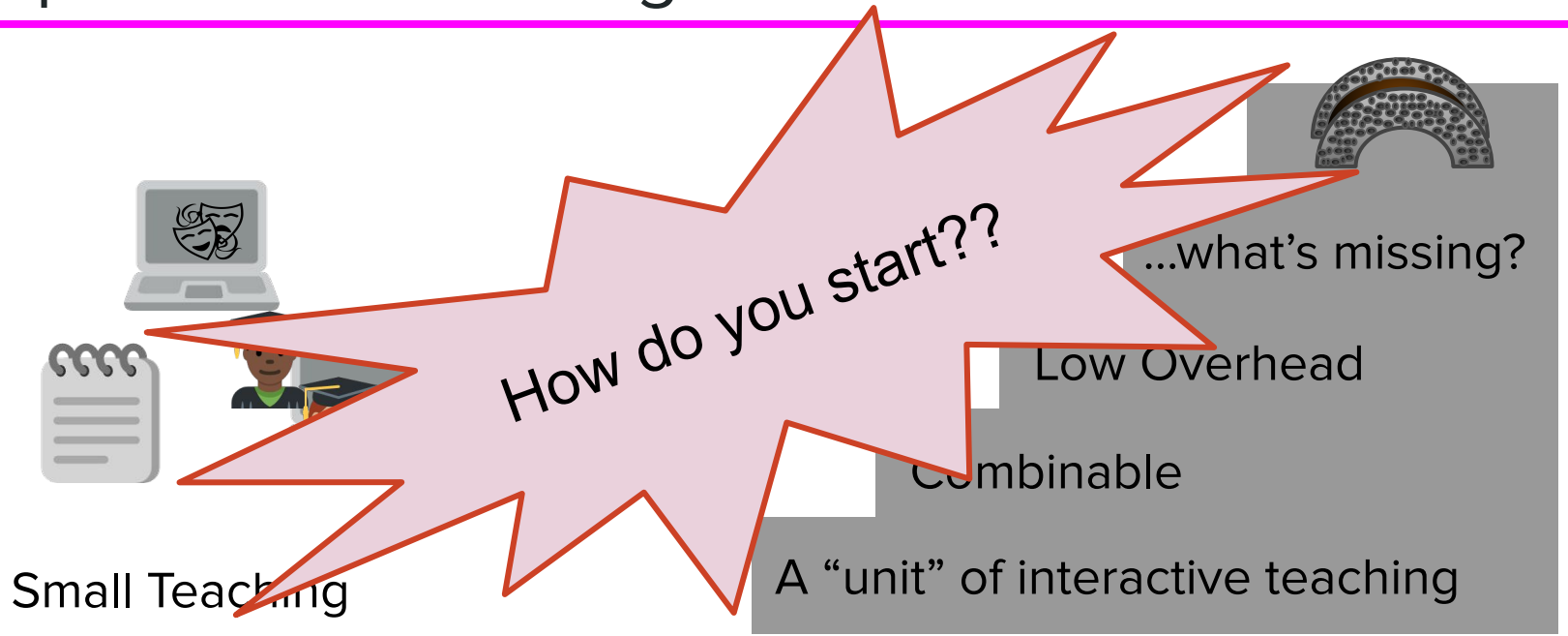
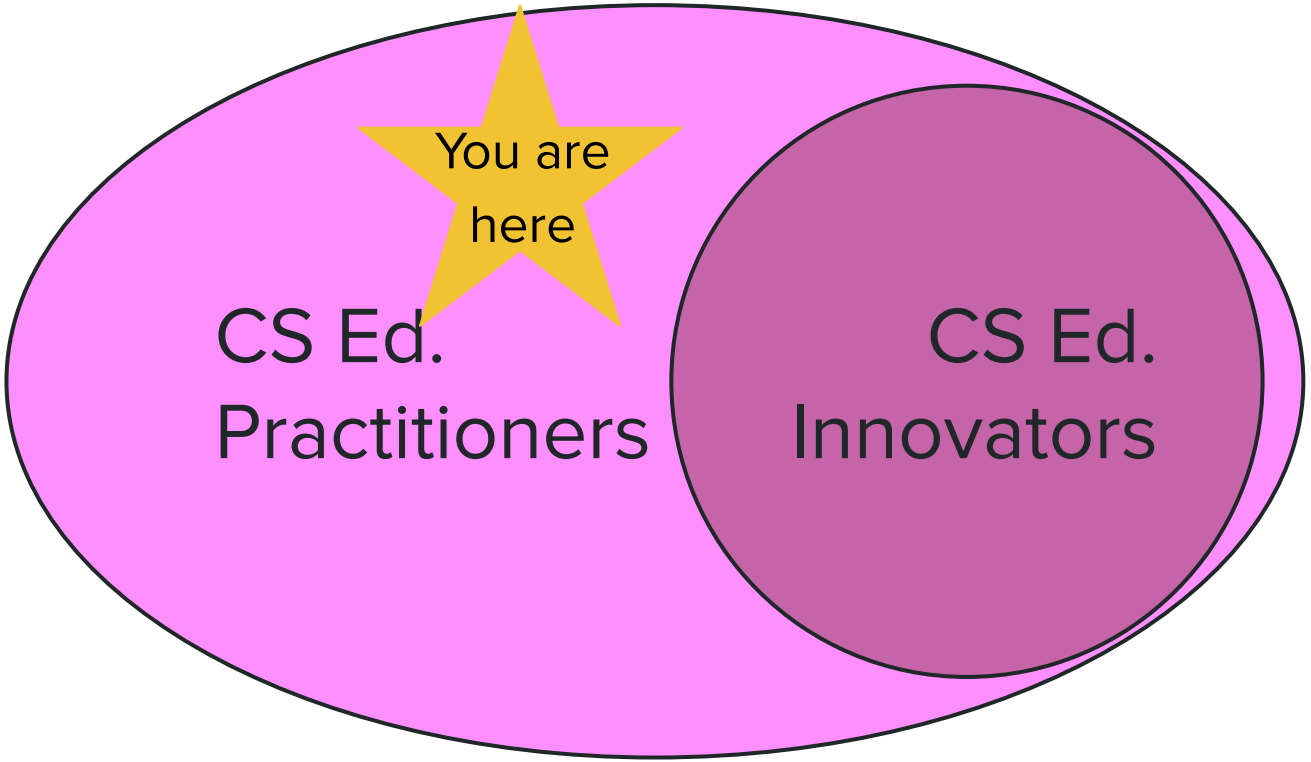


Finding the bridge?



Let’s imagine…

- Ideally, there would be a dataset of CS Ed Innovations
- Documented for re-usability
- Evaluated for motivating to students and administrators
- Accessible with varying time and resource requirements

A Few More Steps…

Computing Education
Research Artifacts

What is an artifact?

CS Ed Artifact

What is an artifact?

CS Ed Artifact - Submitted by CS Ed Researchers

What is an artifact?

CS Ed Artifact

Type: lecture activity, flipped classroom, tool/software, framework…

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⋮

Not all inclusive, but it is a start.

Ensure Quality Artifacts

1) Calls for Artifacts

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2) Artifact Review Committees

Ensure Quality Artifacts

1) Calls for Artifacts

2) Artifact Review Committees

3) Include Junior Researchers

Takeaways

- Small, low effort, teaching innovations can increase access
- Education research artifacts engage junior researchers
- Above all, guide instructors, help build change

Thank you

A Few More Steps

Computing Education Research Artifacts

- Why artifacts?
- What is an artifact in CSER?
- How will we ensure quality artifacts?