The Better Book Approach to Closing Equity Gaps in STEM
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Three main points:
1. Goal
2. Theory
3. Approach

We study how to help people learn things that are hard to learn.

Thanks to our funders:
Goal

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A shift in focus from completion to learning.

The focus on completion has resulted in a large percentage of high school graduates being unprepared for college-level mathematics.

Goal: Building transferable knowledge in introductory statistics
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Theory

The practicing connections hypothesis: teach connections that make knowledge flexible and coherent.

A common approach is to teach the “basics” – the bits – and then hope for transfer. Our approach is to practice transfer from the beginning.

Deliberate practice of connections among core concepts, representations, and the world.
Repeated practice representing, coordinating, and adapting a small number of core concepts to a new situation.

**DATA = MODEL + ERROR**

Students adapted interpretation of $b_1$ to new context.
Approach

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Researchers → Designers/Developers → Course Materials → Instructors

Currently: Silos, with most variation in student outcomes left unexplained.

How do we close the research / practice gap?
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Build R&D communities around development and continuous improvement of high-impact college-level courses

- Ongoing collaboration among researchers, designers/developers, instructors
- Focus on improving online course materials
- *Increase learning, decrease variation*
- Guided by theory
**Approach**

The *Better Book* Approach to Closing Equity Gaps in STEM

Start with fully instrumented interactive textbook

Pages interleave components (narrative, video, R exercises, questions)

1200+ formative assessments
Approach

The Better Book Approach to Closing Equity Gaps in STEM

Approach

Apply methodologies for continuous improvement