The discipline-based education research (DBER) community at the University of Nebraska-Lincoln (UNL) will host its second virtual [X-DBER conference](https://scimath.unl.edu/x-dber) from April 3-5 to discuss how educational theories, methods, applications, and findings cross disciplinary boundaries.

Abstracts (250 words max) for presentations are due Thursday, **February 16**, and should be submitted using this form. Presentation formats include talks (15 min), posters, and longer-format (60 min) workshops or round-table discussions. Workshops are intended to be interactive sessions that actively engage participants around an interdisciplinary topic. Round-table discussions facilitate dialogue on an emerging area of interdisciplinary interest.

A separate registration form for conference attendance will open at a later time.

Email: **dsollberger@ucmerced.edu**

First and Last Names: **Derek Sollberger**

Institution: **University of California Merced**

What STEM discipline do you most closely associate with? **Data Science**

What virtual presentation format do you prefer?

* **Talk (15 minutes)**
* Poster (live on Zoom breakouts)
* Workshop or round-table (60 min)

If your preferred format is not selected, would you want to present a poster instead? **Yes**

Please enter the title of your presentation: **Unpacking the black box: How do student values, behavior, and course content interact to determine student success in a flipped course?**

Submit your abstract here. Abstracts should be no more than 250 words. **For all abstracts, be sure to speak to how your research or topic has the potential for impact across STEM disciplines.** If you are submitting a workshop or round-table, be sure to address what participants will actively do or discuss.

To increase in-class engagement, many instructors have ‘flipped’ their courses. While flipping classes can have great outcomes, the results can vary, although the exact reasoning for that is unknown. This uncertainty stems from two main problems: it is difficult to track student behaviors outside of class, and student engagement behavior may be factor-dependent (e.g., the content being presented, student attitudes toward the content, semester timing, etc.), rather than dependent on the flipped instructional strategy itself.

To address this ‘black box’, we used flipped course videos posted on our learning management system to track per-student, pre-class video engagement behaviors throughout the semester in a required, lower-division **math-intensive** Ecology course at a large southeastern R1 university (student N=91, Video N=23). Previous studies have shown variation in student engagement based on expectancy value (e.g. student interest, perceived cost, and utility value of the material), we paired student behavior (video watching data derived from our LMS) with responses to the Math Biology Values Instrument [MBVI] (Andrews et al 2017), and scored the videos for several parameters of mathematical content/depth. This dataset allows us to ask whether individual student and class-level behaviors vary predictably based on semester timing, student demography, course content, and general attitudes about the subject matter. This study will illuminate how students engage with flipped material on a class- and individual level, and inform instructional strategies on how to structure and assess flipped courses, particularly with traditionally challenging content and highly variable baseline student interest.

Which conference theme does your presentation best fit with? (See below for brief descriptions of each theme)

* Discipline-based education research methods
* Learning and cognition
* **Educational tools and intervention**
* Diversity, equity, inclusion, justice, and belonging
* Interdisciplinary research frontiers

1) Discipline-based education research methods: Abstracts in this theme focus on frameworks, project design, instruments, protocols, and analyses that are broadly useful across disciplines.

2) Learning and cognition: Abstracts in this theme focus on fundamental research about knowledge construction, conceptual change, and student reasoning. Learning and cognition research discussed should have application and relevance across disciplines.

**3) Educational tools and interventions: Abstracts in this theme focus on innovative approaches, curricula, technology, and interventions to improve student outcomes and success. Educational tools and interventions discussed should have application and relevance across disciplines.**

4) Diversity, equity, inclusion, justice, and belonging: Abstracts in this theme focus on asset-minded approaches to centering student experiences and agency as well as research that emphasizes the development of institutional systems, structures, and norms that promote inclusion. Diversity, equity, inclusion, justice, and belonging research should have application and relevance across disciplines.

5) Interdisciplinary research frontiers: Abstracts in this theme focus on research that explicitly requires investigation and coordination across disciplines. This includes (but is not limited to) design and assessment of introductory service courses for specific majors (e.g., general chemistry for biology majors), investigation of concepts or skills across disciplines, instruction related to global challenges (e.g., climate change), and student engagement at the interface of science and society.

If you have any other comments, please include them below.

**Dr. Emily Weigel, teaching faculty and coordinating researcher at Georgia Tech, is a collaborator on this work.**

**We also suggest an alternative theme, Interdisciplinary Research Frontiers, in case it seems more appropriate for this work.**