

# Johan Benedict A. Cristobal

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## RESEARCH INTEREST

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I study frames of teaching and of learning. Specifically, how it changes or is shaped by the experiences and culture around the instructor. For my dissertation, I look into how new instructors develop their frames of teaching and learning and how these frames shape teaching practices to address the pervasiveness of the culture of exclusion in mathematics.

## EDUCATION

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### University of Nebraska - Lincoln (UNL)

- ▷ Ph.D. in Mathematics *expected* May 2025  
Advisor: Dr. Yvonne Lai | *Minor in Teaching, Learning, and Teacher Education*
- ▷ M.S. in Mathematics December 2021

### University of California, Los Angeles

- ▷ B.S. in Mathematics of Computation June 2020

## POSITIONS

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### Graduate Research Assistant *Various Projects*

- ▶ Educating Undergraduate Students for STEM Career Opportunities in Nebraska: Networks, Experiential-learning, & Computational Thinking (STEM CONNECT)  
NSF/S-STEM DUE-1930211; PI Jim Lewis  
Spring 2024 to **Present** – I co-analyzed/conducted interviews of (previous) STEM CONNECT students to collect and report on narratives about perseverance within a STEM degree and undergraduate education, with careful consideration of how to help students finish their STEM degrees. These students are primarily of minority and/or first-generation identity.
- ▶ College of Arts & Sciences Strategies Priorities: *Understanding the experiences of underrepresented students in 300-level mathematics courses*; PI Amy Bennett  
Fall 2023 to **Present** – I co-analyzed underrepresented undergraduate student narratives about their experiences leading up to and taking a real analysis course for the purpose of creating and running a follow-up study with post-secondary mathematics professors and how they notice and frame these narratives with respect to their practice.
- ▶ Mathematics of Doing, Understanding, Learning and Educating for Secondary Schools (MODULE(S<sup>2</sup>)) – NSF DUE-1726744; PI Yvonne Lai  
Summer 2022 to **Present** – I co-analyzed teachers' open-ended responses to survey data to identify qualitative signals of increased expectancy to succeed in teaching, doing, or learning mathematics, or value for inclusive teaching practices.

- ▶ Investigating the Role of Collaboration on the Development of Student Ideas using a Learning Progression for the Function Concept – NSF DRL-2101393; PI Edith Graf  
Spring 2023 to Spring 2024 – I helped map the learning progressions to a Bottle filling activity made as a reality-based activity to learn the concept of functions. I participated and co-led the professional development meetings to learn about (virtual) talk moves.
- ▶ CSForAll: Adapt, Implement and Research at Nebraska (AIR@NE)  
NSF DRL-1837476; PI Leen-Kiat Soh  
Summer 2021 – I conducted interviews of the CSForAll: AIR@NE summer cohort. I checked the accuracy of summaries of previous interview transcriptions.

### Research Experience for Undergraduates (REU) Mentor

Summer 2024 | Mathematics Department at UNL

- ▷ First Generation First Year Research Experience for Undergraduates  
NSF/DMS-2236983; PI Eloísa Grifo  
Affectionally named SMORES (**S**ummer **M**athematics **O**rientation & **R**esearch **E**xperience**S**). Working with another graduate student, I co-organized and co-led this REU for a group of four first-generation students who begin college in the Fall term. Along with completing an appropriately designed mathematics research project, we also provided orientation-like experiences to students (touring campus and resources, hosting panels, etc.).

### Graduate Teaching Assistant *Various Sub-Roles*

August 2020 to **Present** | Mathematics Department at UNL

- As a *Recitation Leader*, I ran recitations once or twice a week to review the lectures, hold guided problem-solving sessions, and address student’s homework concerns.
- As an *Instructor of Record*, I taught a section of students. I designed lectures to address student concerns during on the pre-lecture materials. I implemented mastery-based grading and helped update the lectures.
- ◆ As a *Course Developer*, I reordered the sections of the textbook to better scaffold topics and made the corresponding updates for the course materials (LaTeX and HTML/PreTeX) and online homework. I created Notes pages for students and instructors to use. I made videos for the Intermediate Algebra course and are embedded in the open-source textbook.

## PAPERS IN JOURNALS

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- [1] **Cristobal, J. B.** (in preparation). Looking Inside: Frames in the Context of Teaching and of Learning.
- [2] **Cristobal, J. B.** (in preparation). What We (Can) Learn from Instructor’s Reflections on the Four S’s: Successes, Struggles, Surprises, and Short-term Goals.

## PAPERS IN CONFERENCE PROCEEDINGS

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- [1] Funk, R., Pai, L., & **Cristobal, J. B.** (2024). "Persistence in a S-STEM grant: Understanding the Intersectional Experiences of Women Pursuing STEM." Conference Paper for the *2024 American Society for Engineering Education Annual Conference & Exposition*.
- [2] Funk, R., Pai, L., Rader, B., **Cristobal, J. B.**, & Lewis, J. (2024). "'Someone has invested in me to do this': Supporting Low-Income Students to Persist in STEM through a NSF S-STEM grant." Poster Paper for the *2024 American Society for Engineering Education Annual Conference & Exposition*.
- [3] **Cristobal, J. B.** (2024). "Complicating the Relationship of Frames and Responses in Teacher Noticing." Contributed Report for the *26th Annual Conference on Research in Undergraduate Mathematics Education*.

## TALKS (Reverse chronological)

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- [1] *Successes, Struggles, Surprises and Short-term Goals of Mathematics Graduate Student Instructors Teaching for the First Time*  
Mathematical Association of America's MathFest 2024 in the Research in Undergraduate Mathematics Education session. <https://youtu.be/1TYHb2xk5Hg>
- [2] *Understanding the Intersectional Experiences and Identities of Women Who Persist in STEM*  
2024 Nebraska Mathematical Association of Two Year Colleges, with Dr. Rachel Funk.
- [3] *Coloring the Relationship of Frames and Responses in Teacher Noticing*  
26th Annual Conference on Research in Undergraduate Mathematics Education (Special Interest Group of the Mathematical Association of America on Research in Undergraduate Mathematics Education, SIGMAA on RUME). <https://youtu.be/HE6XIPJRokY>
- [4] *Before and during teaching: New graduate student instructors' frames of teaching*  
7th Northeastern Conference on Research in Undergraduate Mathematics Education.
- [5] *Bridging Frames and Sociomathematical Norms*  
6th Northeastern Conference on Research in Undergraduate Mathematics Education.

## TEACHING

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*Courses Taught as Instructor of Record*

– The ♦ denotes courses I have also worked on as Course Developer.

- ♦ Math 103 - College Algebra and Trigonometry Fall 2024
- ♦ Math 97 - Assisting Learning for University Mathematics Fall 2024
- Math 302 - Math Modeling Spring 2023
- ♦ Math 101C - College Algebra Corequisite Fall 2022
- ♦ Math 101 - College Algebra Spring 2022
- ♦ Math 100A - Intermediate Algebra Fall 2021

*Courses Taught as Recitation Leader.*

- Math 221 - Differential Equations Fall 2023
- Math 107 - Calculus II Spring 2021
- Math 106 - Calculus I Fall 2020

## RELEVANT GRADUATE COURSE WORK for Education Research

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*Supplementary courses taken that are not part of the Mathematics Ph.D. program.*

■ **Educational Psychology Department:**

859 - Statistical Methods *Quantitative Methods*  
900K - Qualitative Approaches to Education Research *Qualitative Methods*

■ **Teaching, Learning, and Teacher Education Department:**

801 - Curriculum Inquiry  
807C - Equitable Practices in Mathematics Education: Mathematics Classroom Discourse  
861 - Education for a Pluralistic Society: Foundation and Issues  
880E - Teaching with Technology: Instructional Technology in Mathematics  
949B - Critical, Anti-colonial, & Decolonizing Theories in Education

## SERVICE

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**Graduate Student Teaching Table** Fall 2022 - Present  
*Co-founder and organizer*

Seminar designed for and by graduate students to discuss education or teaching issues we face at UNL as GSIs, using education literature to organize conversations.

**Research in Graduate Mathematics Education (RGME)** Summer 2024 - Present  
*Member on the Organizing Committee*

**UNL Math Day Organizing Committee** Fall 2023 - Spring 2024  
*Graduate Student organizer for Volunteer outreach/management*

Outreach event for Nebraskan high schoolers that encourage them to pursue a career in a mathematics-based trajectory: [math.unl.edu/math-day-university-nebraska-lincoln](http://math.unl.edu/math-day-university-nebraska-lincoln)

**Session Moderator and Volunteer for RUME 26** February 2024  
*26th Annual Conference on Research in Undergraduate Mathematics Education at Omaha, NE*

**Guest Peer-Reviewer for PRIMUS** Fall 2023  
*Problems, Resources, and Issues in Mathematics Undergraduate Studies – Volunteer*

**Map of Avery Hall, Mathematics Department Building** Fall 2023  
*Self-motivated project/Volunteer*

**Qualifying Exam Review and Preparation Session** Summer 2022  
*Math 830/831 - Ordinary and Partial Differential Equations*

## NOTABLE CONFERENCES & PROFESSIONAL MEETINGS

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◇ = Spoke , ★ = Invited , † = Department Volunteer, \$ = Travel funded

1. Joint Mathematics Meetings | Virtual January 2021
2. KUMUNI-ISU Conference on PDE, Dynamical Systems, and Applications | UNL, Lincoln, NE October 2021
3. ◇ 6th Northeastern Conference on Research in Undergraduate Mathematics Education | Virtual October 2022
4. † Field of Dreams Conference | Minneapolis, MN November 2022
5. 25th SIGMAA on RUME | Omaha, NE February 2023
6. ◇ 7th Northeastern Conference on Research in Undergraduate Mathematics Education | Virtual November 2023
7. † Joint Mathematics Meetings | San Francisco, CA January 2024
8. ◇ 26th SIGMAA on RUME | Omaha, NE February 2024
9. \$ **Workshop:** Critical Issues in Mathematics Education 2024: Bringing Innovation to Scale: Teaching-Focused Faculty as Change Agents | Berkeley, CA April 2024
10. *JimFest:* What, where, and for what purpose is the mathematics in mathematics teacher education? | Lincoln, NE May 2024
11. ◇ \$ MAA Mathfest | Indianapolis, IN August 2024

## AWARDS

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- 1 **Walter Mientka Teaching Award** | Awarded 2021 by the UNL Math Department.

“The Walter Mientka Award is given to students who demonstrate exceptional promise as a teacher based on their work during their first one or two years as a graduate teaching assistant in our department.”

## SKILLS

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**Mathematics** L<sup>A</sup>T<sub>E</sub>X, curriculum development

**Statistical Methods** RStudio

**Programming** C, C++, Python, Matlab, LISP, SQL, and HTML/CSS (Web-design)

**Languages** English (fluent), Filipino/Tagalog (native fluent), Spanish (intermediate)

**Content Creation**

- Videos: <https://www.youtube.com/@johango>, textbook videos, and conference or presentation videos
- Graphics: <https://www.johanmath.com/design>
- Writing: <https://www.johanmath.com/writings>