

Johan Benedict A. Cristobal

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RESEARCH INTEREST

I examine frames of teaching and learning. Specifically, within the context of graduate student instructor (GSI) development, 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

University of Nebraska-Lincoln (UNL), Lincoln, NE

▷ 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 (UCLA), Los Angeles, CA

▷ B.S. in Mathematics of Computation June 2020

POSITIONS

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 helped conduct 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(S²)) – 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 – I helped map the learning progressions to a Bottle filling activity made as a reality-based activity to learn the concept of functions. I also went to 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 helped conduct interviews of the CSForAll: AIR@NE summer cohort. I also helped clean up summaries of previous interview transcriptions.

Graduate Teaching Assistant *Various Sub-Roles*

August 2020 - **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

- [1] **Cristobal, J. B. A.** (Submitted). "Complicating the Relationship of Frames and Responses in Teacher Noticing". Contributed Report for the *26th Annual Conference on Research in Undergraduate Mathematics Education*.
- [2] **Cristobal, J. B. A.** & Young, C., Lai, Y., Bonnesen, C., Strayer, J., Anhalt, C., Casey, S., Kohler, B., Lischka, A., & Ross, A. (in preparation). "What Aspects of Tertiary Mathematics Courses do Prospective Secondary Teachers Attribute to their Learning?" Preparation for the *Journal of Mathematical Behavior*, January/February 2024.

TALKS (Reverse chronological)

- [1] *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).
- [2] *Before and during teaching: New graduate student instructors' frames of teaching*
7th Northeastern Conference on Research in Undergraduate Mathematics Education.
- [3] *Bridging Frames and Sociomathematical Norms*
6th Northeastern Conference on Research in Undergraduate Mathematics Education.

TEACHING

Courses Taught as Instructor of Record.

- 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 Worked on as Course Developer.

- ◆ Math 100A - Intermediate Algebra Summer 2023
- ◆ Math 101 - College Algebra Spring 2023
- ◆ Math 101C - Intermediate Algebra Corequisite Summer 2022 / Summer 2023

Courses Taught as Instructor of Record.

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

RELEVANT GRADUATE COURSE WORK

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

UNL Math Day Committee Fall 2023 - Present

Graduate Student organizer for Volunteer outreach and Challenge activities

Outreach event for Nebraskan high schoolers that encourage them to pursue a career in a mathematics-based trajectory. I aid in recruiting and organizing volunteers and in running sessions (Challenge activities) outside of the competition aspect of the Day.
math.unl.edu/math-day-university-nebraska-lincoln

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.

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

Volunteer

Using the building's outdated floor plans, I increased the readability and usefulness through a redesign and posted these maps at key places around Avery Hall. This solved the issue of students and visitors getting lost in the awkward numbering scheme of the building.

Qualifying Exam Review and Preparation Session

Summer 2022

Math 830/831 - Ordinary and Partial Differential Equations

I was chosen to lead the week-long review session to prepare students who are taking the Differential Equations qualifying exam for their PhD requirements. I utilized and updated material provided by the previous review leader.

CONFERENCES

◇ = Spoke , ★ = Invited , † = Department Volunteer

1. Pacific Math Alliance Conference | California State University at East Bay October 2019
2. Field of Dreams Conference | St. Louis, Missouri November 2019
3. † Field of Dreams Conference | Virtual November 2020
4. Joint Mathematics Meetings | Virtual January 2021
5. KUMUNI-ISU Conference on PDE, Dynamical Systems, and Applications | UNL October 2021
6. paraDIGMS 2021 Fall Conference | Virtual October 2021
7. Field of Dreams Conference | Virtual November 2021
8. ◇ 6th Northeastern Conference
on Research in Undergraduate Mathematics Education | Virtual October 2022
9. † Field of Dreams Conference | Minneapolis, Minnesota November 2022
10. 25th SIGMAA on RUME | Omaha, Nebraska February 2023
11. Math 125 | Lincoln, Nebraska April 2023
12. ◇ 7th Northeastern Conference
on Research in Undergraduate Mathematics Education | Virtual November 2023
13. † Joint Mathematics Meetings | San Francisco, California January 2024
14. ◇ 26th SIGMAA on RUME | Omaha, Nebraska February 2024

AWARDS

1 Dean's Honor List | Awarded Winter 2018 and Spring 2018 by UCLA.

2 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

Mathematics \LaTeX , curriculum development

Statistical Methods RStudio

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

Archaeological Studies ArcGIS, text processing, georeferencing

Languages English (fluent), Filipino/Tagalog (native fluent), Spanish (beginner)

Content Creation

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