Ruo Ning (Nancy) Qiu

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Education

San Diego State University (SDSU) & UC San Diego (UCSD) 2023–Present
Ph.D. Candidate in Mathematics and Science Education (MSED)

University of British Columbia (UBC) 2021–2023
Master of Science in Mathematics

University of Toronto (UofT) 2017–2021
Honours Bachelor of Science with High Distinction

Publications

1. **Qiu, R. N.**, Rasmussen, C., Carney, D., Fortune, N., Santos, J., Ponce, M., Jacome, N., & Stewart, M. (in press). Design principles for connecting university and secondary mathematics: Promoting a critical stance and secondary content knowledge in an upper division mathematics course. *Mathematics Teacher Education and Development*.

2. Fortune, N., **Qiu, R. N.**, Santos, J., Rasmussen, C., Carney, D., Ponce, M., Salvesen, C., Stewart, M., & Jacome, N. (in press). Pre-service secondary school teachers' collective productive struggle in a university mathematics content course. *Proceedings of the Sixth Conference of the International Network for Didactic Research in University Mathematics*.

3. **Qiu, R. N.** (2026). Exploring the relationship between group roles and participation patterns in an inquiry-based mathematics course. In A. P. Adiredja, B. P. Katz, K. Melhuish, & K. Gallagher (Eds.), *Proceedings of the 28th Annual Conference on Research in Undergraduate Mathematics Education* (pp. 100–108). Virginia Tech.

4. Rasmussen, C., **Qiu, R. N.**, Carney, D., Ponce, M., Fortune, N., Jacome, N., & Stewart, M. (2026). Making upper division math courses more relevant for prospective teachers. In A. P. Adiredja, B. P. Katz, K. Melhuish, & K. Gallagher (Eds.), *Proceedings of the 28th Annual Conference on Research in Undergraduate Mathematics Education* (pp. 72–80). Virginia Tech.

5. Aniceto, R. G., Delaney, V., & **Qiu, R. N.** (2026). Prospective teachers' model-building of student thinking on sampling distributions. In A. P. Adiredja, B. P. Katz, K. Melhuish, & K. Gallagher (Eds.), *Proceedings of the 28th Annual Conference on Research in Undergraduate Mathematics Education* (pp. 1317–1318). Virginia Tech.

6. **Qiu, R. N.**, Vadaparty, A., Vintha, S., & Dow, S. P. (2025). Self-reflective crowds: Surfacing wisdom through emergent scaffolding. In *Proceedings of the ACM Collective Intelligence Conference (CI '25)* (pp. 169–187). https://doi.org/10.1145/3715928.3737478

7. **Qiu, R. N.**, Rasmussen, C., Carney, D., & Fortune, N. (2025). The impact of an upper division inquiry-oriented content course on prospective teachers: Embracing a critical stance. In S. Cook, B.P. Katz, & K. Melhuish (Eds.), *Proceedings of the 27th Annual Conference on Research in Undergraduate Mathematics Education* (pp. 346–354). Virginia Tech.

8. **Qiu, R. N.** (2025). Exploring students' understanding of a limit of a sequence: Using ϵ-strip activity with Realistic Mathematics Education framework. In S. Cook, B.P. Katz, & K. Melhuish (Eds.), *Proceedings of the 27th Annual Conference on Research in Undergraduate Mathematics Education* (pp. 1404–1405). Virginia Tech.

Manuscripts in Progress (Reverse Chronologically)

1. Aniceto, R. G., **Qiu, R. N.**, & Delaney, V. (under review). Prospective teachers' model-building of student thinking on sampling distributions. *Proceedings of the forty-eighth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*.

2. **Qiu, R. N.**, Rasmussen, C., Fortune, N., & Carney, D. (under review). The impact of an upper division inquiry-oriented content course on prospective teachers: Embracing a critical stance. *International Journal of Research in Undergraduate Mathematics Education*.

3. Fortune, N., Rasmussen, C., Carney, D., Salvesen, C., **Qiu, R. N.**, Santos, J., Jacome, N., & Stewart, M. (in preparation). Preservice mathematics teachers' collective productive struggle: Shared joy is double the joy, shared struggle is half the struggle. *Defining, Cultivating, and Sustaining Productive Struggle in Mathematics Classrooms*, *Investigations in Mathematics Learning*.

4. Marcroft, T. A., **Qiu, R. N.**, & Komperda, R. (in preparation). Practices in instrument use and development in the Journal of Chemical Education 2010–2024. *Journal of Chemical Education*.

5. Li, W., Ho, C., **Qiu, R. N.**, Wang, Y., & Ortner, C. (in preparation). Analyzing frequentist inverse problems in machine-learned interatomic potentials: A theoretical framework.

Research Experience

Speaking to Learn: AI-Enhanced Voice Discussions for Active Learning in Higher Education Sept 2025–Present
UCSD, ProtoLab, Graduate Research Assistant

Making Upper Division Mathematics Courses More Relevant for Future High School Teachers: The Case of Inquiry-Oriented Dynamical Systems and Modeling Aug 2024–Present
SDSU, Graduate Research Assistant, NSF#2337047

Emergent Scaffolding for Knowledge Sharing in Communities Feb 2024–August 2025
UCSD, ProtoLab, Graduate Research Assistant

Investigating Teaching Assistants' Beliefs About Teaching and Learning Fall 2024
UCSD, Dept. of Computer Science & Engineering (CSE), Research Rotation

The Chemistry Instrument Review and Assessment Library Aug 2023–2024
SDSU, Graduate Research Assistant, NSF#1914996

Course Sequencing in CSE and Equity Analytics Plan Spring 2024
UCSD, Dept. of CSE, Research Rotation

Examining the Impact of Mathematical Definitions on Students' Writing Sept 2020–Oct 2022
UofT, Independent Study in Math Education

Exploring Mathematics Models Against Diabetes: Glucose Level Analysis Summer 2020
UofT, Fields Institute, Undergraduate Research Assistant

Measuring Conceptual Knowledge in First-Year Calculus Summer 2019
UofT, Research Opportunity Program

Conference Talks

1. Santos, J., **Qiu, R. N.**, Carney, D., Fortune, N., & Rasmussen, C. (2026, April). *Fostering a critical stance through inquiry: Transforming future teachers' perspectives in an upper-division mathematics course*. Paper session accepted at the Annual Meeting of the American Educational Research Association (AERA), Los Angeles, CA.

2. **Qiu, R. N.** (2026, February). Exploring the relationship between group roles and participation patterns in an inquiry-based mathematics course. Talk presented at the 28th Annual Conference on Research in Undergraduate Mathematics Education, Alexandria, VA.

3. Rasmussen, C., **Qiu, R. N.**, Carney, D., Ponce, M., Fortune, N., Jacome, N., & Stewart, M. (2026, February). Making upper division math courses more relevant for prospective teachers. Talk presented at the 28th Annual Conference on Research in Undergraduate Mathematics Education, Alexandria, VA.

4. Rasmussen, C., Carney, D., Fortune, N., Jacome, N., Ponce, M., **Qiu, R. N.**, Santos, J., & Stewart, M. (2026, January). *Revisiting secondary school mathematics in the context of an upper division mathematics course for prospective teachers: The case of horizontal function translation*. Talk presented at the Joint Mathematics Meetings, Washington, DC.

5. **Qiu, R. N.**, Vadaparty, A., Vintha, S., & Dow, S. P. (2025, August). Self-reflective crowds: Surfacing wisdom through emergent scaffolding. Talk presented at the ACM Collective Intelligence Conference, University of California San Diego, California, CA.

6. Marcroft, T. A., **Qiu, R. N.**, & Komperda, R. (2025, March). *Patterns in the development and use of education instruments in the Journal of Chemical Education (2010–2020)*. Talk presented at the ACS Spring 2025 National Meeting, San Diego, CA.

7. **Qiu, R. N.**, Rasmussen, C., Fortune, N., & Carney, D. (2025, February). *The impact of an upper division inquiry-oriented content course on prospective teachers: Embracing a critical stance*. Talk presented at the 28th Annual Conference on Research in Undergraduate Mathematics Education, Alexandria, VA.

8. **Qiu, R. N.**, Marcroft, T. A., & Komperda, R. (2024, July). *Instrument development and use in the Journal of Chemical Education (2010–2014)*. Talk presented at the Biennial Conference on Chemical Education, University of Kentucky, KY.

9. Smith, K., & **Qiu, R. N.** (2024, February). *Cohort-based program and seminar course for first-year science students*. Facilitated dialogue presented at the 43rd Annual Conference on The First-Year Experience, Seattle, WA.

10. Barresek, K., Li, X., **Qiu, R. N.**, & Siefken, J. (2022, October). *Exploring the effectiveness and usage of math definitions in exam responses*. Talk presented at the Northeastern Conference on Research in Undergraduate Mathematics Education, Online.

11. **Qiu, R. N.**, & Ortner, C. (2022, July). *Estimating interatomic potentials as a Bayesian inversion problem*. Talk presented at the Ottawa Math Conference, Online.

12. Bachina, P., **Qiu, R. N.**, Wan, G., & Yang, X. (2020, August). *Testing math models against diabetes: Glucose level analysis*. Talk presented at the Canadian Undergraduate Mathematics Conference, Online.

Posters

1. Aniceto, R. G., Delaney, V., & **Qiu, R. N.** (2026, Februray). Prospective teachers' model-building of student thinking on sampling distributions. Poster presented at the 28th Annual Conference on Research in Undergraduate Mathematics Education. SIGMAA on RUME. Alexandria, VA.

2. Carney, D., Rasmussen, C., Fortune, N., **Qiu, R. N.**, Jacome, N., & Stewart, M. (2025, August). *Making upper division mathematics courses more relevant for future high school teachers: The case of inquiry-oriented dynamical systems and modeling*. Poster presented at MAA MathFest 2025, Sacramento, CA.

3. **Qiu, R. N.** (2025, February). *Exploring students' understanding of a limit of a sequence: Using ϵ-strip activity with Realistic Mathematics Education framework*. Poster presented at the 27th Annual Conference on Research in Undergraduate Mathematics Education. SIGMAA on RUME. Alexandria, VA.

4. **Qiu, R. N.**, Marcroft, T. A., & Komperda, R. (2024, June). *A case study: Comparing instruments in chemistry education and mathematics education with a coding scheme*. Poster presented at the UC STEM T^{3}PN Conference, University of California, Irvine, CA.

5. Ing, K., LeBlanc-Doucet, T., Mayes-Tang, S., Mooroogen, Y., & **Qiu, R. N.** (2020, January). *Measuring conceptual knowledge of first-year calculus*. Poster presented at MathEd Forum Research Day, Fields Institute, University of Toronto, ON.

Workshops

PEER-SoCal, University of San Diego — July 2024
Regional Field School on Discipline-Based Education Research

Critical Issues in Mathematics Education, UC Berkeley — Apr 2024
Bringing Innovation to Scale: Teaching-Focused Faculty as Change Agents

Manuscript Reviews

Journal of *Investigations in Mathematics Learning*	2026
ACM Conference on Human Factors in Computing Systems, CHI	2026
28th Annual Conference on Research in Undergraduate Mathematics Education	2026
Journal of *Mathematics Teacher Education and Development*	2025
ACM Collective Intelligence Conference	2025
27th Annual Conference on Research in Undergraduate Mathematics Education	2025

Academic Service

MSED Graduate Student Council: Graduate Student Representative	2025–Present
MSED Peer Mentoring Committee	2025–Present
UBC IAM Graduate Student Committee	2023

Awards & Honors

SSHRC Canada Graduate Research Scholarship - Doctoral	2026–

SDSU University Graduate Fellowship 2025–26

SDSU Presidential Graduate Research Fellowship 2023

UBC Faculty of Science Graduate Award 2021–22

UofT Dean's List Scholar 2018–21

UofT Scholar 2017

Professional & Teaching Experience

Mentor TA, Dept. of CSE, UCSD Fall 2024, Fall 2025
CSE599 - Teaching Methods in Computer Science

VERSA **Pod Mentor**, Research Experiences for Undergraduates Program, UCSD Summer 2024

Small Class Instructor, Dept. of Mathematics, UBC Winter 2023
MATH101 - Integral Calculus with Applications

Graduate Teaching Assistant, Dept. of Mathematics, UBC Sept 2021–May 2023
MATH200 - Calculus III, MATH444 - Mathematical Research and Writing, MATH105 - Integral Calculus with Applications to Commerce and Social Sciences, & MATH405 - Numerical Methods for Differential Equations

Graduate Curriculum Assistant, Dept. of Science, UBC Summer 2022

Teaching Assistant, Dept. of Mathematics, UofT Sept 2018–May 2021
MATH223 - Linear Algebra

Observation Teaching Assistant, UofT Sept 2019–May 2020, Spring 2021

Remote Course Community Advisor, Work Study Program, UofT Summer 2020

Skills

Programming Languages: `Python`, `Java`, `Julia`, `R`, `MATLAB`, `SQL`

Data Analytics Tools: JASP, MAXQDA, Qualtrics

Certificate: CIRTL Associate (Summer Teaching Institute, UBC)