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)

Dissertation: Mapping Participation in Active Learning: Relationships Between Classroom Ecosystem, Participations, and Students' Growth

Dissertation Committee: Dr. Chris Rasmussen (Chair), Dr. Mary Pilgrim, Dr. Regis Komperda, Dr. Christoforos Mamas, Dr. Stacy Ochoa, & Dr. Nicholas Fortune

University of British Columbia (UBC) 2021–23
Master of Science in Mathematics

University of Toronto (UofT) 2017–21
Honours Bachelor of Science with High Distinction

PEER-REVIEWED JOURNAL ARTICLES

1. **Qiu, R. N.**, Rasmussen, C., Fortune, N., & Carney, D. (in press). 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*.

2. **Qiu, R. N.**, Rasmussen, C., Fortune, N., Carney, D., Santos, J., Ponce, M., Jacome, N., & Stewart, M. (2026). Connecting university and secondary mathematics: Design principles for developing prospective teachers' content knowledge and critical stance. *Mathematics Teacher Education and Development, 28*(3), Article 19. https://mted.merga.net.au/index.php/mted/article/view/1441

PEER-REVIEWED CONFERENCE PROCEEDINGS

1. Aniceto, R., **Qiu, R. N.**, & Delaney, V. (2026). Prospective teachers' model-building of student thinking on sampling distributions. In K. R. Leatham, B. E. Peterson, D. K. Siebert, & D. Teuscher (Eds.), *Proceedings of the forty-eighth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 1310–1315). Brigham Young University.

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. In *Proceedings of the 6th 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 UNDER REVIEW AND IN PROCESS

1. Fortune, N., Rasmussen, C., Carney, D., **Qiu, R. N.**, Salvesen, C., Santos, J., Stewart, M., Ponce, M., & Jacome, N. (under review). The social dimension of preservice mathematics teachers' productive struggle: Shared joy is double the joy, shared struggle is half the struggle. *International Journal of Research in Undergraduate Mathematics Education*.

2. Santos, J., **Qiu, R. N.**, Rasmussen, C., Fortune, N., Carney, D., Zerpa, A., & Beasley, M. (under review). Experiencing the Standards for Mathematical Practice: Prospective mathematics teachers' aspirations for teaching. *29th Annual Conference on Research in Undergraduate Mathematics Education*.

3. **Qiu, R. N.**, Fortune, N., Rasmussen, C., Santos, J., Stewart, M., Carney, D., Jacome, N., & Ponce, M. (under review). What comes first, inputs or outputs? Prospective teachers' output-first perspective on horizontal function translations. *29th Annual Conference on Research in Undergraduate Mathematics Education*.

4. Vadaparty, A., **Qiu, R. N.**, & Minnes, M. (in preparation). How should professional development for computer science teaching assistants adapt in response to the emergence of GenAI?

5. 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*.

6. 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.

PRESENTATIONS

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 presentation]. American Educational Research Association Annual Meeting, Los Angeles, CA.

2. **Qiu, R. N.** (2026, February). *Exploring the relationship between group roles and participation patterns in an inquiry-based mathematics course* [Paper presentation]. 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* [Paper presentation]. 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* [Paper presentation]. 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* [Paper presentation]. ACM Collective Intelligence Conference, San Diego, 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)* [Paper presentation]. 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* [Paper presentation]. 27th 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)* [Paper presentation]. Biennial Conference on Chemical Education, University of Kentucky, Lexington, KY.

9. Smith, K., & **Qiu, R. N.** (2024, February). *Cohort-based program and seminar course for first-year science students* [Facilitated dialogue]. 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* [Paper presentation]. 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* [Paper presentation]. Ottawa Math Conference, Online.

12. Bachina, P., **Qiu, R. N.**, Wan, G., & Yang, X. (2020, August). *Testing math models against diabetes: Glucose level analysis* [Paper presentation]. 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, April). *A case study: Comparing instruments in chemistry education and mathematics education with a coding scheme*. Poster presented at the MAA SoCal-Nev Section Meeting, University of San Diego, 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.

RESEARCH WORKSHOPS

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

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

RESEARCH EXPERIENCE

Exploring the Impacts of Conversational Feedback on Group Dynamics and Learning — 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–Aug 2025
UCSD, ProtoLab, Graduate Research Assistant

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

The Chemistry Instrument Review and Assessment Library — Aug 2023–24
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 — July–Sept 2020
UofT, Fields Institute, Undergraduate Research Assistant

Measuring Conceptual Knowledge in First-Year Calculus — May–Sept 2019
UofT, Research Opportunity Program

AWARDS & HONORS

CGRS D Research Travel Supplement — 2026
Up to six months of research travel (CAD $9,000)

UCSD Summer Graduate Teaching Scholar — 2026

SSHRC Canada Graduate Research Scholarship – Doctoral (CGRS D) 2026–
Nationally competitive doctoral research scholarship (CAD $40,000/year)

SDSU University Graduate Fellowship 2026–27
Merit-based fellowship (USD ∼$34,300 of stipend and scholarship)

SDSU Presidential Graduate Research Fellowship 2023–24
Nonresident tuition waiver (USD ∼$15,000)

UBC Faculty of Science Graduate Award 2021–22
CAD $1,500/session

UofT Dean's List Scholar 2018–21

UofT Scholar 2017

TEACHING & PROFESSIONAL EXPERIENCE

F = Fall, S = Spring, Su = Summer

Instructor on Record

Associate Instructor	UCSD	MATH 3B – Foundations of Pre-Calculus (Su26)
Small Class Instructor	UBC	MATH 101 – Integral Calculus with Applications (S23)

Teaching Assistantships

Graduate Teaching Assistant	UBC	MATH 405 – Numerical Methods for Differential Equations (F22)
	UBC	SCIE 100 – First-Year Focus Seminar in the Computational Sciences (F22)
	UBC	MATH 444 – Mathematical Research and Writing (S22)
	UBC	MATH 105 – Integral Calculus with Applications to Commerce and Social Sciences (S22)
	UBC	MATH 200 – Calculus III (F21)
Undergraduate Teaching Assistant	UofT	MAT 223 – Linear Algebra I (F18, S19, F19, S20, F20, S21)

Mentoring, Curriculum Development, & Student Support

Mentor Teaching Assistant	UCSD	CSE 599 – Teaching Methods in Computer Science (F24, F25)
VERSA Pod Mentor	UCSD	Research Experiences for Undergraduates Program (Su24)
Graduate Curriculum Assistant	UBC	SCIE 100 – First-Year Focus Seminar in the Computational Sciences (Su22)
Observation Teaching Assistant	UofT	Mathematics Teaching Assistant Professional Development Program (F19, S20, S21)
Remote Course Community Advisor	UofT	Work Study Program in Dept. of Computer Science (Su20)
Academic Peer Advisor	UofT	Trinity College Academic Support Services (F20, S21)

PEER REVIEW SERVICE

Annual Conference on Research in Undergraduate Mathematics Education 2024–26

Journal of *Investigations in Mathematics Learning* 2026

ACM Conference on Human Factors in Computing Systems (CHI) 2026

Journal of *Mathematics Teacher Education and Development* 2025

ACM Collective Intelligence Conference 2025

ACADEMIC SERVICE

MSED Graduate Student Council: Graduate Student Representative 2025–Present

MSED Peer Mentoring Committee 2025–Present

UBC IAM Graduate Student Committee 2023

SKILLS

Certificate:

Engaged Teaching Scholar in Student-Centered College Teaching, UCSD

CIRTL Associate, Summer Teaching Institute, UBC

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

Data Analytics Tools: JASP, MAXQDA, Qualtrics