

Megan Brunner

PhD Candidate in Mathematics Education • Oregon State University
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Education

PhD in Mathematics Education

Fall 2016 – present

Oregon State University, College of Education

Candidacy Achieved – Spring 2019

Expected completion – June 2022

Dissertation Title: *Exploring Teachers' Commitments to Equity and Social Justice in Mathematics Education*

Advisor: Dr. Rebekah Elliott

MA in Interdisciplinary Studies

2018 – 2019

Oregon State University, Graduate School

Education, Sociology, & Mathematics

Project Title: *Analyzing Observational Tools' Conceptions of Equitable Instruction and Potential Impacts on Teacher Learning*

Advisor: Dr. Rebekah Elliott

BA in Mathematics

2012 – 2016

State University of New York at Geneseo

Adolescent Mathematics Education Certification, Minor in Sociology

Research Experience

Graduate Research Experience

Research Assistant

Aug. 2019 – Aug. 2021

Designing Ambitious Mathematics Instructional Tools: A Collaborative Research-Practice Partnership. CPM Foundation. PI: Dr. Rebekah Elliott.

College of Education, Oregon State University

- Project explored how teachers, leaders, and administrators identify problems of practice and develop, revise, and enact instructional tools in attending to these problems
- Goal of project to create a professional network of math teachers and leaders within and across school districts, where educational stakeholders are able to collaborate on shared problems of practice
- Developed interview protocols and conducted semi-structured interviews with teacher leaders regarding their instructional resources and tensions that arise around their use
- Collected and analyzed qualitative data from teacher leader-led Studio Cycles around the use of routines for modelling and data science

Research Assistant**Aug. 2020 – Dec. 2020***College of Agricultural Science, Oregon State University***Aug. 2019 – Dec. 2019**

- Researched learning experiences and outcomes of student experiences who participated in a Leadership Academy program.
- Conducted quantitative data analysis and collaborated on writing reports and presentations to share programmatic design that led to increases in student competence in leadership skills

Research Assistant**Jan. 2019 – June 2019**

Math in Real Life: Developing Math Teacher Leaders (MiRL-DML). Oregon Department of Education. PI: Dr. Rebekah Elliott.

College of Education, Oregon State University

- Project investigated how secondary mathematics teachers engage students in mathematical modeling tasks and practices within the classroom
- Collaborated with teacher leaders to develop modeling routines and other instructional tools to support student engagement and teacher practice
- Assisted in the preparation and delivery of professional development opportunities for Oregon math teachers
- Created collection of resources, including routines, planning tools, and mathematical tasks shared with Oregon math teachers

Research Assistant**Jan. 2018 – April 2019****Project Manager****Jan. 2018 – June 2018**

CAREER: Personal Epistemology in Engineering Education. National Science Foundation Research in Engineering Education. PI: Dr. Devlin Montfort

College of Engineering, Oregon State University

- Organized research team of masters and doctoral students; facilitated meetings and communications across data and sub-projects
- Explored epistemic practices and stances of professional engineers, postsecondary engineering faculty, and undergraduate engineering students using discourse analysis

Research Assistant**Aug. 2016 – Dec. 2017**

Bioenergy Education Initiative. (under Dr. Katharine Field). Part of USDA-NIFA Grant # 2011-68005-30407: *System for Advanced Biofuels Production from Woody Biomass in the Pacific Northwest*. PI: Dr. Rick Gustafson, University of Washington.

Oregon State University

- Created, validated, and utilized assessment tools for 4 programs spanning teacher leaders, secondary students, and undergraduate students
- Developed curriculum on real-world connections to Bioenergy concepts
- Created and delivered professional learning sessions to Oregon SMILE teacher leaders
- Facilitated Middle School Challenge to engage approximately 100 students in project-based learning experience with a collaboratively designed educational board game

Undergraduate Research Experience

Research Intern

Mathematics Education REU, University of Connecticut
Mathematics REU, Kansas State University.

May 2015 – Aug. 2015
May 2014 – July 2015

Teaching Experience

University Teaching Experience

Instructor

2018 – 2022

College of Education, Oregon State University

Curriculum Design and Instructional Strategies 7-12 (ED 425)

Winter 2020, 2022

- Design and teach the undergraduate methods course for science and mathematics certification teacher candidates across a variety of modalities
- Topics include identifying and adapting tasks that have opportunity for high-cognitive demand engagement, facilitating equitable discourse building towards learning goals

Inquiry in Mathematics and Mathematics Education (SED 414).

Spring 2019, 2020

E-Campus

Winter 2021

Co-Instructor

Spring 2018

- Revised and taught the mathematics content course for pre-teacher candidates across a variety of modalities
- Topics include Standards for Mathematical Practice, experiencing rigorous mathematics, including tasks investigating contextually relevant social issues

Mathematics Pedagogy and Technology I (SED 574)

Fall 2018, 2020

- Revised and taught the mathematics content course for pre-teacher candidates across a variety of modalities
- Topics include developing practices aligned with Ambitious Instruction, implementing tasks investigating contextually relevant social issues in student teaching placements

Instructor

Winter 2022

College of Agricultural Science, Oregon State University

Seminar: Graduate Writing (AED 508)

- Facilitating small group and individual academic writing support for doctoral candidates and master's theses students
- Topics include structuring literature reviews and developing arguments using theory

Teaching Assistant

Fall 2019

College of Education, Oregon State University

Content Standards and Curriculum Development for High School (ED 494)

- Acted as math and science specialist in general education course for teacher candidates
- Topics include designing tasks and lesson plans that provide opportunities for students to engage in reasoning and problem solving

University Teaching Experience - Other

Course Designer

Summer 2020

E-Campus, Oregon State University

Inquiry in Mathematics and Mathematics Education (SED 414)

University Supervisor

2019, 2021

College of Education, Oregon State University

Advanced Mathematics (n=8)

K-12 Teaching Experience

STEM Lead Teacher and Advisory Lead Teacher

Summers 2020-21

Aim High @ Home, Chinatown/North Beach Campus, San Francisco, CA

- Delivered remote instruction for STEAM challenges to middle school grades (rising 7th, 8th, and 9th) students via Zoom
- Facilitated community circles and social emotional learning space development for students to explore their identities and connections to community
- Mentored undergraduate students in developing remote teaching practices

Lead Teacher and Math Team Lead

Summers 2018-19

Aim High, Chinatown/North Beach Campus, San Francisco, CA

- Primary teacher for 8th grade mathematics students from historically minoritized communities
- Lead math team meetings to support rigorous mathematics teaching and learning
- Facilitated meetings for lead teachers targeting use of effective and equitable instructional strategies
- Mentored undergraduate students interested in becoming future mathematics educators

Lead Teacher

Summers 2016-17

Aim High, Chinatown/North Beach Campus, San Francisco, CA

- Primary teacher for 9th grade mathematics students from historically underrepresented and underserved communities
- Leveraged student interests and utilized a problem-based learning format to facilitate mathematics learning that is relevant to student population
- Mentored undergraduate students interested in becoming future mathematics educators

Teacher Candidate

Sept. 2015 – Dec. 2015

Gates-Chili School District, Rochester, NY

- Taught 4 sections of 7th and Accelerated 7th grade math in an urban school district

York Central School District, York, NY

- Taught 4 sections of Algebra I and Algebra II courses in a rural school district

K-12 Teaching Experience - Other

Math Curriculum Design Collaborator

January 2022 – present

Aim High, San Francisco, CA

- Part of a team of math experts to design instructional opportunities that engage students in rigorous mathematics, provide foundational skills for mathematical literacy

Leadership Institute Fellow

October 2019 – present

Aim High, San Francisco, CA

- Collaborated in professional learning opportunities with other site and program leadership members
- Set and evaluated teacher and student learning goals for the summer program
- Designed professional learning opportunities for teachers at Chinatown/North Beach campus to support student engagement in joyful learning as well as teacher development of instructional strategies that attend to issues of justice in education

Publications and Presentations

Manuscripts in Progress

Brunner, M. (in preparation). *Discourses of justice in mathematics education: Exploring conceptions of the field.*

Brunner, M. (in preparation). *Analyzing observational tools' conceptions of equitable instruction and potential impacts on teacher learning.*

Peer-Reviewed Manuscripts

Elliot, R., **Brunner, M.**, & Stoddard, E. (2022). Modeling routines for building student agency and authority. *Mathematics Teacher: Learning and Teaching PK-12*, 115(1), 36-44.

Brunner, M., Elliott, R., & Stoddard, E. (2021). Assumptions, agency, and authority: Mathematical modelling and students' socio-critical reasoning. In D. Kolloche (Ed.), *Exploring new ways to connect: Proceedings of the Eleventh International Mathematics Education and Society Conference* (Vol. 1, pp. 137–140). Tredition.
<https://doi.org/10.5281/zenodo.5387558>

Choi, Y.H., **Brunner, M.**, Traini, H. (2021). Partial, (in) authentic, and masked: an exploration of power in doctoral students' identity development as scholars through collaborative autoethnography. *International Journal of Qualitative Studies in Education*, 1-17.
<https://doi.org/10.1080/09518398.2021.1891320>

Brunner, M., Elliott, R., & Stoddard, E. (2021). Teachers' routine and adaptive expertise through mathematical modelling instruction in remote learning. In D. Olanoff, K. Johnson, & S.M. Spitzer, (Eds.). *Proceedings of the forty-third annual meeting of the*

North American Chapter of the International Group for the Psychology of Mathematics Education. Philadelphia, PA.

Brunner, M. (2020). Exploring teachers' constructions of equity in mathematics education: an ecological approach. In A.I. Sacristán, J.C. Cortés-Zavala, & P.M. Ruiz-Arias, (Eds.). *Mathematics Education Across Cultures: Proceedings of the forty-second annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. Mexico.

Elliott, R., Stoddard, E., & **Brunner, M.**, (2019). Iterative designs of modeling tools for instruction. In Otten, S., Candela, A. G., de Araujo, Z., Haines, C., & Munter, C. (Eds.), *Proceedings of the forty-first annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 589-593). St Louis, MO: University of Missouri.

Albin, N., **Brunner, M.**, Perez, R., Poggi-Corradini, P., & Wiens, N. (2015). Modulus on graphs as a generalization of standard graph theoretic quantities. *Conformal Geometry and Dynamics of the American Mathematical Society*, 19(13), 298-317.

Other Publications

Brunner, M., Stoddard, E., & Elliott, R. (2020). *Practice brief: Mathematical modeling*. Oregon Math Project. <https://www.oregon.gov/ode/educator-resources/standards/mathematics/SiteAssets/Pages/Oregon-Math-Project/Mathematical%20Modeling.pdf>

Brunner, M., Stoddard, E., & Elliott, R. (2020). *Practice brief: Promoting equity*. Oregon Math Project. <https://www.oregon.gov/ode/educator-resources/standards/mathematics/SiteAssets/Pages/Oregon-Math-Project/Promoting%20Equity.pdf>

Stoddard, E., **Brunner, M.**, & Elliott, R. (2020). *Practice brief: Classroom discourse*. Oregon Math Project. <https://www.oregon.gov/ode/educator-resources/standards/mathematics/SiteAssets/Pages/Oregon-Math-Project/Classroom%20Discourse.pdf>

Stoddard, E., **Brunner, M.**, & Elliott, R. (2020). *Practice brief: Tracking*. Oregon Math Project. <https://www.oregon.gov/ode/educator-resources/standards/mathematics/SiteAssets/Pages/Oregon-Math-Project/Tracking.pdf>

Invited Addresses

Brunner, M., Stoddard, E., Elliott, R. (2020, March). *Mathematical modeling instructional tools fostering student agency and equity*. Presented at the Teachers Development Group Leadership Seminar, Portland, OR.

Peer-Reviewed Conference Presentations

- Elliott, R., **Brunner, M.**, & Stoddard, E. (accepted). *Teaching Routines in Mathematics Studio Adaptive Professional Development: Data Routines in Response to Socio-Political Events*. American Educational Research Association. San Diego, CA.
- Elliott, R., **Brunner, M.**, & Stoddard, E. (accepted). *Teacher designed instructional tools: Material and relational resources for mathematics instructional improvement*. Association of Mathematics Teacher Educators. Las Vegas, NV.
- Stoddard, E., Elliott, R., & **Brunner, M.** (accepted). *Scaffolding students learning of mathematical modelling through instructional routines*. Association of Mathematics Teacher Educators. Las Vegas, NV.
- Traini, H., **Brunner, M.**, & Velez, J. (2021, October 20-25). *Linking curricular experiences to leadership outcomes in a year-long leadership development program*. International Leadership Association. Geneva, Switzerland.
- Brunner, M.**, Elliott, R., & Stoddard, E. (2021, October 14-17). *Teachers' routine and adaptive expertise through mathematical modelling instruction in remote learning*. The 43rd Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Philadelphia, PA.
- Brunner, M.**, Elliott, R., & Stoddard, E. (2021, September 24-28). *Assumptions, agency, and authority: Mathematical modelling and students' socio-critical reasoning* [Paper presentation]. Mathematics Education and Society Conference. Klagenfurt, Austria: University of Klagenfurt.
- Brunner, M.** (2020). *Exploring teachers' constructions of equity in mathematics education: an ecological approach*. The 42nd Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Mexico. (Conference rescheduled for May 27-30, 2021)
- Brunner, M.** Choi, Y.H., Traini, H. (2020, April 17-21). *"I felt invisible": Exploring power in doctoral students' scholarly identity development through collaborative autoethnography*. AERA, San Francisco, CA. (Conference canceled)
- Elliott, R., Stoddard, E., & **Brunner, M.**, (2019, November 14-17). *Iterative designs of modeling tools for instruction*. The 41st Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. St Louis, MO: University of Missouri.
- Choi, Y.H., **Brunner, M.**, Traini, H. (2019, May 28- June 1). *"Extremely empowering (and nerve-wracking)": A Collaborative autoethnographic examination of power in doctoral students' scholarly identity development*. Presented at the National Conference on Race and Ethnicity in American Higher Education, Portland, OR.

- Brunner, M.** (2019, April 12-13). *Taking up equitable instruction in higher education: Learning from K-12 observation tools*. Presented at the Mathematical Association of America Pacific Northwest Regional Conference, Portland State University, OR.
- Glover, E., **Brunner, M.**, & Elliott, R. (2019, April 12-13). *Supporting ambitious mathematics with mathematics majors via tasks, routines, and norms*. Presented at the Mathematical Association of America Pacific Northwest Regional Conference, Portland State University, OR.
- Tomcal, C. & **Brunner, M.** (2018, Feb.). *Teaching ambitiously: Developing an understanding of necessary affordances and challenges*. Poster presented at the Oregon Association of Teacher Educators Conference, Western Oregon University, OR.
- Brunner, M.**, Russ-Eft, D., Well, J., & Field, K. (2017, June). *Teacher workshops: Facilitating learning through a community of practice*. Paper presented at the Undergraduate Forum for Human Resource Development International Conference, Lisbon, Portugal.
- Bennett, C., **Brunner, M.**, & Evans, K. (2016, Jan.) *Mathematics and intercultural competence in the middle school*. Poster presented at the Joint Mathematics Meeting, Seattle, WA.
- Bennett, C., **Brunner, M.**, & Evans, K. (2016, Jan.) *Towards developing intercultural competence with interdisciplinary topics in mathematics*. Paper presented at the Joint Mathematics Meeting, Seattle, WA.
- Brunner, M.** & Wiens, N. (2015, Jan.). *The continuity properties of modulus function on walk families*. Presented at the National Conference for Undergraduate Women in Mathematics, University of Nebraska, NE.
- Brunner, M.** (2014, Oct.). *The continuity properties of modulus function on walk families*. Presented at the Mathematical Association of America Seaway Regional Conference, Alfred State University, NY.

Professional Service

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| edTPA Portfolio Evaluator - Local Scorer
<i>College of Education, Oregon State University</i> | March 2021 |
| Mathematics Education Faculty Search Committee
<i>College of Education, Oregon State University</i> | Aug. 2018 – June 2019 |
| Academic Coach Coordinator
<i>SMILE Summer Bridge to College Program, Oregon State University</i> | Aug. 2017 – Sept. 2017 |
| Co-Founder, Vice President
<i>Math Educators Forum, SUNY at Geneseo</i> | Mar. 2015 – May 2016 |

Reviewer

Mathematics Teacher: Learning & Teaching PK-12 (2020 – present)

International Journal of Qualitative Studies in Education (2020 – present)

Association of Mathematics Teacher Educators Conference (2020 – present)

Psychology of Mathematics Education North America Conference (2019 – present)

Democracy in Education (2018 – present)

NCTM Research Conference (2018 – present)

Professional Certifications

New York State Initial Teaching License

2016 – 2021

Secondary Mathematics, grades 7 – 12

Oregon State Reciprocal Teaching License

2017 – 2018

Advanced Mathematics, grades PK – 12

Professional Memberships and Affiliations

American Educational Research Association (AERA)

Association of Mathematics Teacher Educators (AMTE)

National Council of Teachers of Mathematics (NCTM)

North American Chapter of the International Group for the Psychology of Mathematics Education (PMENA)

TODOS: Mathematics for All