Todd August Grundmeier

Associate Professor of Mathematics
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Educational History

University of New Hampshire, Durham, NH

- Ph.D. in Mathematics Education May 2003, Thesis Advisor: Dr. Karen Graham
  Dissertation Title: *The Effects of Providing Mathematical Problem Posing Experiences for K-8 Pre-Service Teachers: Investigating Teachers' Beliefs and Characteristics of Posed Problems*
- M.S. in Mathematics, May 2000
- B.S. in Mathematics Education: Secondary Option, May 1997

Teaching Experience

California Polytechnic State University, San Luis Obispo, CA

- Calculus I, II & III (Math 141, 142, 143)
- Mathematics for Elementary Teaching I, II & III (Math 227, 328, 329)
- Differential Equations (Math 242)
- Methods of Proof (Math 248)
- Technology in Mathematics Education (Math 300)
- Early Field Experience (SCM 300)
- Algebraic Thinking Using Technology (Math 330)
- Theory of Numbers (Math 341)
- Introduction to the History of Mathematics (Math 419)
- Student Teaching Seminar (Math 425)
- Euclidean Geometry (Math 442)
- Modern Geometries (Math 443)
- Graduate Teaching Seminar (Math 505)
- Senior Project (Math 461/462), have advised and completed fifty senior projects.

Portland State University, Portland, OR

- Topics in Geometry: Transformational Geometry (Math 583)

University of New Hampshire, Durham, NH

- Elementary Functions (Math 305)
- Historical Foundations of Mathematics (Math 619)
- Exploring Mathematics for Teachers II (Math 702)
- Higher Geometry for Teachers I (Math 905)
- Higher Analysis for Teachers I & II (Math 907, 908)

University Distinguished Teaching Award Recipient, 2014-2015

Publications (All co-authors in ***bold*** were Cal Poly students at the time of the work)

Papers Under Review

- Grundmeier, T.A., ***Eubank, A***., ***Garrity, S., Hamlin, A.N***., Retsek, D. Assumption and Definition Use in an Inquiry-Based Introduction to Proof Course, *PRIMUS,* submitted May 2018

As Associate Professor

- Grundmeier, T.A., (2015). Developing the Problem Posing Abilities of Prospective Elementary and Middle School Teachers. In (Eds.) J. Cai, N. Ellerton, and F.M. Singer, *Mathematical Problem Posing: From Research to Effective Practice*. Springer.
- Grundmeier, T.A., Retsek, D. and ***Stepanek D***. (2013). A Foray Into Describing Mathematics Majors' Self-Inquiry During Problem Solving. In *Proceedings of the 16th Annual Conference on Research in Undergraduate Mathematics Education*, Vol. 1, pgs. 258-269.. Denver, CO.
- ***Eubank, A., Garrity, S***. and Grundmeier, T.A. (2013). Proof Structure in the Context of Inquiry-Based Learning. In *Proceedings of the 16th Annual Conference on Research in Undergraduate Mathematics Education*, Vol. 1, pgs. 205-218. Denver, CO.
- Grundmeier, T.A., ***Eubank, A***., ***Garrity, S., Hamlin, A.N***., Retsek, D. (2012). Undergraduate Proof in the Context of Inquiry-Based Learning. In (Eds.) S. Brown, S. Larsen, K. Marrongelle, and M. Oehrtman, *Proceedings of the 15th Annual Conference on Research in Undergraduate Mathematics Education*, Vol. 1, pgs. 216-230. Portland, Oregon.
- Simard, C. and Grundmeier, T.A. (2011). Exploring the van Hiele Levels of Prospective Mathematics Teachers. In (Eds.) S. Brown, S. Larsen, K. Marrongelle, and M. Oehrtman, *Proceedings of the 14th Annual Conference on Research in Undergraduate Mathematics Education*, Vol. 2, pgs. 473-487. Portland, Oregon.
- Simard, C. and Grundmeier, T.A. (2010). Influence of an Inquiry-Oriented, Technology-Based, Proof-Intensive Geometry Course on the van Hiele Levels of Prospective Mathematics Teachers. *Paper in the Proceedings of the SITE Conference*, San Diego, CA, March/April 2010.

As Assistant Professor

- Grundmeier, T.A., ***Branchetti, J., Castillo, L.J***. and ***Stroud, C***. (2008). Implications of undergraduates' conceptions of function. *Paper in the Proceedings of SIGMAA-RUME Conference*, San Diego, CA, March 2008.
- Grundmeier, T.A., ***Babcock, J***. and ***Odom, S***. (2008). Prospective secondary mathematics teachers' conceptions of rational numbers. *Paper in the Proceedings of SIGMAA-RUME Conference*, San Diego, CA, March 2008.
- Habre, S. & Grundmeier, T.A. (2007). Prospective mathematics teachers' views on the role of technology in mathematics education. *IUMPST: The Journal*, Vol. 3 (Technology).
- Portnoy, N., Grundmeier, T.A. & Graham, K.J. (2006). Student's understanding of mathematical objects in the context of transformational geometry: Implications for constructing and understanding proofs. *Journal of Mathematical Behavior, 25*, 196-207.
- Grundmeier, T.A., ***Hansen, J***. & ***Sousa, E***. (2006). An exploration of definition and procedural fluency in integral calculus, *PRIMUS, 16*(2), pgs. 178-191.

Prior to Starting at Cal Poly

- Grundmeier, T.A. (2002). University students' problem posing abilities and attitudes towards mathematics, *PRIMUS, 12*(2), pgs. 122-134.

External Presentations (All co-presenters in ***bold*** were Cal Poly students at the time of the work)

As Full Professor

- Champney, D. and Grundmeier, T.A. Inquiry-Based Learning Across Disciplines. Invited public talk Sacramento State University, October 2018.
- Grundmeier, T.A. and Retsek, D. A Continued Exploration of Self-Inquiry in the Context of Proof and Problem Solving. Conference of SIGMAA – Research in Undergraduate Mathematics Education, February 2017.

- **Avila L**., Grundmeier, T.A. and Retsek, D. *A Comparison of Self-Inquiry in the Context of Mathematical Problem Solving*. Conference of SIGMAA – Research in Undergraduate Mathematics Education, February 2015.

As Associate Professor

- Grundmeier, T.A., Retsek, D. and ***Stepanek D***. *Self-Inquiry in the Context of Undergraduate Problem Solving* Conference of SIGMAA – Research in Undergraduate Mathematics Education, February 22, 2013.
- ***Eubank, A., Garrity, S***. and Grundmeier, T.A. *Proof Structure in the Context of Inquiry-Based Learning.* Conference of SIGMAA – Research in Undergraduate Mathematics Education, February 22, 2013.
- Grundmeier, T.A., ***Eubank, A., Garrity, S., Hamlin, A.N***., Retsek, D. *Undergraduate Proof in the Context of Inquiry-Based Learning.* Conference of SIGMAA – Research in Undergraduate Mathematics Education, February 25, 2012.
- Simard, C. and Grundmeier, T.A. *Exploring the van Hiele Levels of Prospective Mathematics Teachers*. Conference of SIGMAA – Research in Undergraduate Mathematics Education, February 27, 2011.
- Simard, C. and Grundmeier, T.A. *The van Hiele Levels of Prospective Secondary Mathematics Teachers*. International Conference of the Society for Information Technology and Teacher Education, April 1, 2010.
- Simard, C. and Grundmeier, T.A. *The van Hiele Levels of Prospective Secondary Mathematics Teachers*. Annual Meeting of the Association of Mathematics Teacher Educators, January 30, 2010. ***Award***: Presentation was awarded the National Technology Leadership Initiative Award from AMTE, which supported the presentation of the work at the SITE conference in April 2010.

As Assistant Professor

- Grundmeier, T.A. *Preparing Prospective Secondary Teachers to Incorporate Technology in Mathematics Education*. California Mathematics Council – Southern Section Fall Conference, November 6, 2009.
- Grundmeier, T.A. and Medina, E. *Preparing Prospective Secondary Mathematics Teachers for Positions in High-Need Districts*. California Mathematics Council – Southern Section Fall Conference, November 7, 2008.
- Grundmeier, T.A and Medina, E. *Preparing Prospective Secondary Mathematics Teachers for Positions in High-Need Districts*. Breakout session led at NSF Annual Noyce Scholarship Program Conference, Washington, D.C., June 2008.
- Grundmeier, T.A., ***Branchetti, J., Castillo, L.J***. and ***Stroud, C***. *Implications of Undergraduates' Conceptions of Function.* Presentation at SIGMAA-RUME Conference, San Diego, CA, March 2008.
- Grundmeier, T.A., ***Babcock, J***. and ***Odom, S.*** *Prospective Secondary Mathematics Teachers' Conceptions of Rational Numbers*. Presentation at SIGMAA-RUME Conference, San Diego, CA, March 2008.
- Grundmeier, T.A. *Preparing Prospective Secondary Teachers to Incorporate Technology in Mathematics Education*. California Mathematics Council – Southern Section Fall Conference, November 3, 2007.
- Grundmeier T.A. *Creating Opportunities for Prospective Teachers to Reflect on the Role of Technology in Their Future Classrooms.* Annual Meeting of the Association of Mathematics Teacher Educators, January 25-27, 2007.
- Grundmeier, T.A. *Incorporating Problem Posing in Mathematics Content Courses for Prospective K-8 Teachers*. California Mathematics Council – Southern Section Fall Conference, November 4, 2006.
- Grundmeier, T.A. *Characteristics of Prospective Teachers' Posed Problems*. Presentation at the Joint Meetings of the Mathematical Association of America and the American Mathematical Association, January 2004, Phoenix, AZ.

Prior to Starting at Cal Poly

- Graham, K.J., Portnoy, N., & Grundmeier, T.A. *Making Mathematical Connections*. Presentation at the conference on Psychology in Mathematics Education (PME-NA), October 2002, Athens, GA.
- Grundmeier, T.A. *Problem Posing with Pre-Service Teachers: Data Analysis*. Presentation to the Mathematics Education Seminar, University of New Hampshire, September 29, 2002.
- Grundmeier, T.A. Problem Posing in a Mathematics Content Class for Pre-Service Teachers. Presentation at the conference on Research in Undergraduate Mathematics Education, Burlington, VT, August 31, 2002.
- Grundmeier, T.A. *Problem Posing with Pre-Service Teachers: Data Organization*. Presentation to the Mathematics Education Seminar, University of New Hampshire, March 29, 2002.

- Graham, K.J., Portnoy, N., & Grundmeier, T.A. *Making Mathematical Connections*. Presentation at the Joint Meetings of the American Mathematical Society and Mathematical Association of America, January 2002, San Diego, CA.
- Grundmeier, T.A. *Problem Posing with Pre-Service Teachers.* Presentation to the Mathematics Department, University of New Hampshire, December 12, 2001.
- Grundmeier, T.A. *Composition Operators on the Weighted Bergman Spaces*. Presentation to the Mathematics Department, University of New Hampshire, November 9, 2001.

Cal Poly Presentations

- Simard, C. and Grundmeier, T.A. *The van Hiele Levels of Prospective Secondary Mathematics Teachers*. Mathematics Department Colloquium, California Polytechnic State University, January 15, 2010.
- Grundmeier, T.A. *Preparing Prospective Secondary Teachers to Incorporate Technology in Mathematics Education*. Mathematics Department Colloquium, California Polytechnic State University, October 26, 2007.
- Grundmeier, T.A. *Do Students' Views of Mathematical Objects Affect Their Abilities to Construct Proofs*. Mathematics Department Colloquium, California Polytechnic State University, March 4, 2005.

External Grants

Currently Under Review

- Cal Poly Mathematics Noyce Scholars Program, Track 1, National Science Foundation
    - Co-PI with Dr. Elsa Medina to continue our Noyce scholarship program, including scholarships for Cal Poly students and summer workshops for scholars from the Western United States. Proposal submitted in August of 2018 requesting $1.2 million over 5 years.

Previously Funded

- *Cal Poly Noyce Scholars Program, Phase II*, National Science Foundation
    - Co-PI with Dr. Elsa Medina to continue our Noyce scholarship program, continue development of summer workshops for Noyce scholars and to disseminate our summer workshop model. The funding period is 5 years beginning September 15, 2013 and the total funding is $798,000.
- *AIBL Small Grant*
    - A $2500 award to support the teaching of Math 442 (Euclidean Geometry) during Winter 2011 using Inquiry Based Learning.
- *Cal Poly Noyce Scholars Program, Phase I*, National Science Foundation
    - Co-PI with Dr. Elsa Medina on a $425,000 grant to develop a scholarship program for current mathematics majors at Cal Poly and STEM professionals who wish to pursue a credential to teach secondary mathematics. The funding period is 4 years beginning July 1, 2007 and $360,000 of the funding will be awarded in scholarship to Cal Poly students.

University Grants

- Cal Poly, Center for Teaching and Learning Grant Program
    - Received a grant for support summer 2006 to redesign Math 300 (Technology in Mathematics Education) to include more authentic activities that will allow students to reflect on their future teaching of mathematics.
- California State University, State Faculty Support Grant
    - Grant received for 4-units of assigned time during winter 2006. The time assigned was used to complete and submit for publication two papers related to my dissertation.

Other Professional Experience

- **Workshop Facilitator, PRODUCT** - Work as part of a team of university faculty from across the United States to develop, plan and facilitate workshops for university faculty who are interested in making their teaching more student-centered. The workshops are funded as part of a $2.8 million grant from the National Science Foundation. I have led 4-day summer workshops in 2016, 2017 and 2018 as well as a 1-day short workshop at Sacramento State in October 2018.

- **Cal Poly Noyce Scholars Workshop** - Developed and led summer 2008 through 2018 workshops with Dr. Elsa Medina for Noyce Scholars from Cal Poly and multiple Western Region Noyce Projects.
- **Advised Summer REU, Summer 2018** - Co-advised two students with Dr. Dylan Retsek and conducted an exploratory study on definition of readability in the context of mathematical proof.
- **Advised Summer REU, Summer 2012** – Co-advised one student with Dr. Dylan Retsek as we undertook a long discussed research project on students' self-inquiry in the process of problem solving.
- **Invited Panel Presenter** – Invited presenter on a new users panel on teaching Geometry using IBL at the Fifteenth Annual Legacy of R.L. Moore Conference, Austin TX, June 2012.
- **Advised Summer REU, Summer 2011** – Advised three students as they analyzed data collect during Spring 2011 on undergraduates' proof abilities in the context of an IBL Methods of Proof course.
- **Center for Teaching and Learning** – Participated in year long faculty learning community to implement the ideas of Universal Design Learning in Algebraic Thinking with Technology (Math 330).
- **Manuscript Reviewer** – Have reviewed papers related to my research interests for the following journals, *Investigations in Mathematics Learning, Research in Collegiate Mathematics Education, Journal of Mathematical Behavior, PRIMUS, Educational Studies in Mathematics* and *International Journal of Research in Undergraduate Mathematics Education*.
- **Collaborated on Masters Thesis in SMaTE** – Collaborated on research for Carole Simard's Masters Thesis, which explored the influence of inquiry-oriented instruction in geometry on students' Van Hiele levels of geometric understanding. The data collection was part of my Math 442 (Euclidean Geometry) course during Winter 2008.
- **Professional Development Facilitator CMaSP** – Developed and led professional development for mathematics teachers from Santa Maria Bonita School District as part of the summer 2007 and summer 2008 CMaSP weeklong workshops as well as during the 2007-2008 and 2006-2007 academic year.
- **Advised Summer REU, Summer 2007** – Advised three students as they analyzed data collect during Spring 2007 on undergraduates conceptions of function.
- **CSET Workshop Facilitator, 2006-2007** – Designed and implemented a 16-week workshop focused on the CSET I and CSET II exams for middle school teachers in Templeton, CA. The workshop was co-sponsored by the Templeton Unified School District and CESaME. The workshop resulted in approximately 70% of attendees passing both CSET exams.
- **Advised Summer REU, Summer 2005** – Advised two students as they analyzed data from my dissertation focusing on the relationship between students' problem solving strategies and their problem posing techniques.
- **Proposal Reviewer, National Science Foundation, July 2004** – Reviewed proposals for Course, Curriculum and Laboratory Improvement (CCLI) funding stream. Responsibilities included reading proposals writing and submitting reviews on-line and discussing reviews with a working group.

Service

Mathematics Department

- Chair Mathematics Department PRC, Fall 2018 – present
- Member of Graduate Program Steering Committee, Fall 2016 - present
- Member of College Peer Review Committee, Fall 2014 – Spring 2016.
- Department Scheduler, Fall 2012 – present.
- Member of Graduate Committee, Fall 2009 – Fall 2012.
- Member of Committee to oversea addressing Department review of student success in calculus, 2008-2009.
- Member of Curriculum Committee, 2004 – 2006
- Member of Committee to review department procedures for assessing the mathematical preparation of graduating students, 2006-2007.
- Member of Committee to review the Retention, Promotion and Tenure procedures and criteria, 2004-2005 academic year.

University

- Member of University Quantitative Reasoning Committee, Fall 2015 – Spring 2016.

- Attended Spring Commencement 2004 – 2006, 2008-2012, 2013 - 2017
- Member of the Liberal Studies Advisory Board, Fall 2007 – Spring 2010.
- Member Bella Montana Board of Directors, January 2007 – September 2010.
- Member of Preface Committee Fall 2006 – Summer 2009, meet weekly to preview discuss and ultimately choose the book to be used in the Preface program.
- Lead Preface Discussion during WOW week 2005, 2006, 2007 and 2008.
- Summer 2004, 2010 and 2011 - Participated in SOAR.