

## Brooke Max

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### Contact Information

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### Education

#### **Ph.D. in Mathematics Education**

August 2014 – 2018

*The Mathematical Content Preparation of Elementary Teachers*

Advisor: Jill Newton, PhD (janewton@purdue.edu)

Purdue University, West Lafayette, IN

(GPA 3.96/4.00)

#### **Master of Ed. in Curriculum and Instruction**

June 2006 – May 2008

Olivet Nazarene University, Bourbonnais, IL

(GPA 3.97/4.00)

#### **Bachelor of Science in Mathematics Education**

Purdue University, West Lafayette, IN

August 1999 – May 2003

Secondary Mathematics Education Major/Spanish Minor

(GPA 3.59/4.00)

Secondary Mathematics Teaching License 2003 – 2017

#### **Study Abroad**

El Tec de Monterey, Monterey, Mexico

May 2001 – June 2001

Studied Spanish, Literature, & Culture

### Awards

**Purdue University Ruth & Joel Spira Excellence in Teaching Mathematics Award**

2021-2022

**Purdue University College of Education Nominee for the Council of Graduate Schools/ProQuest Distinguished Dissertation Award**

2020

**Purdue University College of Science Professional Achievement Award**

2019-2020

**Purdue University Frederick N. Andrews Fellowship**

August 2014 – 2016

**Purdue University Mike Keedy Fellowship in Mathematics and Education**

2015, 2016, 2018

### Publications

Sapkota, B., & **Max, B.** (2024). Preservice secondary teachers' mathematical knowledge for teaching: Focus on reflective practice. *Investigations in Mathematics Learning*, 1-20.

<https://doi.org/10.1080/19477503.2024.2373653>

Stump, S., Johnson, B., **Max, B.** & Roan, C. (2023). Building a knowledge base for elementary teacher

education: Focus on addition and subtraction. *AMTE Connections*. 33(2).

<https://amte.net/connections/2023/11/building-knowledge-base-elementary-teacher-education-focus-addition-and>

Sapkota, B., & **Max, B.** (2023). A conceptual synthesis on approximations of practice in mathematics teacher education. *Research in Mathematics Education*, 1-27. <https://doi.org/10.1080/14794802.2023.2207088>

**Max, B.**, & Kohn, S. (2022). Textbook use of connections to children to support prospective elementary teachers' geometric understanding. *Indiana Mathematics Teacher*. Fall. <https://www.math.purdue.edu/~bmax/MaxKohnICTMArticle2022.pdf>

**Max, B.** (2021). Messages communicated through mathematics content for elementary teachers course syllabi: A focus on mathematical disposition and collaboration. *Mathematics Teacher Education and Development*. 23(2), 4-23. <https://files.eric.ed.gov/fulltext/EJ1307270.pdf>

**Max, B.** & Welder, R. M. (2020). Mathematics teacher educators' addressing the common core standards for mathematical practice in content courses for prospective elementary teachers: A focus on critiquing the reasoning of others. In A. Appova, R. M. Welder, and Z. Feldman, (Eds.), *Supporting Mathematics Teacher Educators' Knowledge and Practices for Teaching Content to Prospective (Grades K-8) Teachers. Special Issue: The Mathematics Enthusiast*, ISSN 1551-3440, vol. 17, nos. 2 & 3, pp. 843–881. ScholarWorks: University of Montana. Retrieve (open access). <https://scholarworks.umt.edu/tme/vol17/iss2/16/> DOI: 10.54870/1551-3440.1505

**Max, B.**, & Amstutz, M. (2019). The intersection of MET II content domains and mathematical knowledge for teaching in mathematics content for elementary teachers courses. *Issues in the Undergraduate Mathematics Preparation of School Teachers: The Journal*, 2: Content Knowledge, 1-7. <https://eric.ed.gov/?id=EJ1206232>

Kersey, E., **Max, B.**, Akarsu, M., Bloome, L., Suazo, E., & Hoffman, A. J. (2019). Use of written curriculum in applied calculus. *International Journal of Research in Education and Science (IJRES)*, 5(2), 457-467. <https://eric.ed.gov/?id=EJ1203807>

**Max, B.** (2017). Preservice secondary mathematics teachers' conceptualizations of equity: Access and power as seen through vignette responses. *School Science and Mathematics*. 117, 286–294. <https://doi.org/10.1111/ssm.12246>

**Max, B.**, & Newton, J. (2017). Mathematics preparation of elementary teachers: Results of a national survey. *AMTE Connections*. <https://amte.net/connections/2017/09/mathematics-preparation-elementary-teachers-results-national-survey>

**Max, B.**, & Bloome, L. (2016). Policies and practices influencing algebra I students and teacher placement in Indiana. *Indiana Mathematics Teacher*. Summer. <https://www.math.purdue.edu/~bmax/IMT2016.pdf>

**Max, B.**, & Newton, J. (2015). Teaching university mathematics: One mathematician's contribution. *Notices of the American Mathematical Society*, 62(09), 1062. <https://www.ams.org/notices/201509/rnoti-p1062.pdf>

## **Conference Proceedings**

Zhou, L., Sapkota, B., **Max, B.**, Newton, J., Jung, H., Keazer, L., & McKee, R. (2024). Exploring the narratives of women mathematics educators through a dialogical self-approach. In K.W. Kosko, J. Caniglia, S.A. Courtney, M. Zolfaghari., & G.A. Morris, (Eds). *Proceedings of the forty-sixth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. Kent State University.

**Max, B.**, Kastberg, S. & Suazo-Flores, E. (2024, July). *Problem-posing and geometry standards: Building from preservice elementary teachers' initial efforts in mathematics content courses*. The 15th International Congress on Mathematical Education. Sydney, Australia.

**Max, B.**, Jung, H., Newton, J., Sapkota, B., & Zhou, L. (2024, July). *Balancing identities: An autoethnography of women with mathematics education doctorates*. The 15th International Congress on Mathematical Education.

Zhou, L., McKee, R., **Max, B.**, Jung, H., Sapkota, B., Newton, J., & Keazer, L. (2023). Figured Worlds of Women Mathematics Education Scholars. In T. Lamberg & D. Moss (Eds). *Proceedings of the forty-five annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education: Vol. 2.* (pp. 48-52). University of Nevada, Reno.

Sapkota, B. & **Max, B.** (2021). A conceptual synthesis on approximations of practice. In D. Olanoff,

K. Johnson, & S. Spitzer (Eds.), *Proceedings of the forty-third annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 1819-1829). Philadelphia, PA. <https://bit.ly/PMEproceed>

**Max, B., & Welder, R.** (2020). Textbook use of children's thinking to support prospective elementary teachers' geometric understanding. In A.I. Sacristán, J.C. Cortés-Zavala, & P.M. Ruiz-Arias, (Eds.), *Mathematics Education Across Cultures: Proceedings of the 42nd Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 1738-9). Mexico: Cinvestav / AMIUTEM / PME-NA. <https://doi.org/10.51272/pmena.42.2020>

**Max, B.** (2019) Engaging prospective elementary teachers in standards for mathematical practice within content courses for teachers. In S. Otten, A. G. Candela, Z. de Araujo, C. Haines, & C. Munter, (Eds.), *Proceedings of the forty-first annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 1141-1145). St Louis, MO: University of Missouri.

**Max, B.** (2017). Mathematics content courses for elementary teachers: Current state of programs. In E. Galindo & J. Newton, (Eds.), *Proceedings of the 39th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (p. 994). Indianapolis, IN: Hoosier Association of Mathematics Teacher Educators.

Amstutz, M., **Max, B.**, Farmer, S., Aqazade, M., Chen, L., Weiland, B. (2017). At the crossroads of confidence and insecurity: A phenomenological study of mathematics teachers. In E. Galindo & J. Newton, (Eds.), *Proceedings of the 39th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (p. 533). Indianapolis, IN: Hoosier Association of Mathematics Teacher Educators.

**Max, B.**, Lee, J., Mohr, D., Hudson, R., & Newton, J. (2017). Synergy across universities: Examining the efficacy of statewide professional development. In E. Galindo & J. Newton, (Eds.), *Proceedings of the 39th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (p. 547). Indianapolis, IN: Hoosier Association of Mathematics Teacher Educators.

Kersey, E., **Max, B.**, Akarsu, M., Bloome, L., Suazo, E., & Hoffman, A. (2015). Use of written curriculum in applied calculus. In T. G. Bartell, K. N. Bieda, R. T. Putnam, K. Bradfield, & H. Dominguez (Eds.), *PMENA-37 proceedings: Critical responses to enduring challenges in mathematics education* (pp. 112-115). East Lansing, MI: North American Chapter of the International Group for the Psychology of Mathematics Education.

**Max, B.**, & Bloome, L. (2015). Investigating Algebra Programs: Indiana as a Case Study. In T. G. Bartell, K. N. Bieda, R. T. Putnam, K. Bradfield, & H. Dominguez (Eds.), *PMENA-37 proceedings: Critical responses to enduring challenges in mathematics education* (p. 120). East Lansing, MI: North American Chapter of the International Group for the Psychology of Mathematics Education.

## **Presentations**

**Max, B.**, (2024). Engaging students in mathematical problem posing. Presentation at the Purdue University Mathematics Department Innovative Teaching Seminar. West Lafayette, Indiana.

**Max, B.**, Suazo-Flores, E., & Kastberg, S. (2024). Problem posing and geometry standards: Building from preservice elementary teacher's efforts to align domain knowledge. [Conference session]. Association of Mathematics Teacher Educators, Orlando, FL.

Fitch, J., & **Max, B.**, (2023). *Cognitive demand in the mathematics classroom*. [Conference session]. Joint Conference of Indiana Council of Teachers of Mathematics/Hoosier Association of Science Teachers, Inc. Indianapolis, IN.

**Max, B.**, Nern, S., & Smith, S. (2023). *STEM in action: Using geometry and technology to measure tree height*. [Conference session]. Joint Conference of Indiana Council of Teachers of Mathematics/Hoosier Association of Science Teachers, Inc. Indianapolis, IN.

**Max, B.**, & Hoffman, A. (2022). *Identifying elementary standards that lend themselves to rich mathematical tasks* [Conference session]. National Council of Teachers of Mathematics Conference, Indianapolis, IN.

**Max, B.**, Suazo-Flores, E., & Kastberg, S. (2022). Collaborations among faculty to support preservice elementary

- teacher' development. [Conference session]. Association of Mathematics Teacher Educators, Las Vegas, NV.
- Max, B.,** (2019). *Expanding spatial reasoning* [Conference session]. Indiana Council of Teachers of Mathematics Conference, Indianapolis, IN.
- Fitch, J. Newton, J., & **Max, B.** (2019). *STEM talks: Number talks reimagined* [Conference session]. Purdue STEM Conference, West Lafayette, IN.
- Max, B.,** (2018). *MKT converging in activities for mathematics content for elementary teachers courses* [Conference session]. Indiana Council of Teachers of Mathematics Conference, Indianapolis, IN.
- Stump, S., **Max, B.,** & Berry, S. (2018). *Creating opportunities for prospective elementary teachers to learn mathematics: Perspectives and personal journeys* [Conference session]. Association of Mathematics Teacher Educators Conference, Orlando, FL.
- Lee, J.S., Hudson, R., Mohr, D., **Max, B.,** Ko, Y., Frost, J. (2018). *Molding teachers' visions of algebraic learning and teaching: Reflecting on a three-year algebra professional development* [Conference session]. Association of Mathematics Teacher Educators Conference, Orlando, FL.
- Max, B.,** (2018). *Addressing of CCSSM SMPs in mathematics content for elementary teachers courses* [Conference session]. Indiana Mathematics Education Research Symposium, Indianapolis, IN.
- Nichols, S., McIntyre, J., McDonald, K., **Max, B.,** (2017). *Co-teaching in middle school math* [Conference session]. Indiana Council of Teachers of Mathematics Conference, Indianapolis, IN.
- Max, B.,** (2016). *Teaching math pro-actively: Teaching mathematics for all learners* [Conference session]. Indiana Council of Teachers of Mathematics Conference, Indianapolis, IN.
- Max, B.,** (2016). *Secondary pre-service mathematics teachers' conceptualizations of equity* [Poster session]. Annual Graduate Student Education Research Symposium, West Lafayette, IN.
- Max, B.,** (2016). *Pre-service secondary mathematics teachers' conceptualizations of equity* [Conference session]. Indiana Mathematics Education Research Symposium, Indianapolis, IN.
- Max, B.,** & Bloome, L. (2015). *Investigating Indiana algebra I policies and programs* [Conference session]. Indiana Council of Teachers of Mathematics Conference, Indianapolis, IN.
- Bloome, L., & **Max, B.** (2015). *Investigating algebra policy: Indiana as a case study* [Poster session]. Annual Graduate Student Education Research Symposium, West Lafayette, IN.
- Max, B.,** & Bloome, L. (2015). *Investigating algebra policy: Indiana as a case study* [Conference session]. Indiana Mathematics Education Research Symposium, Indianapolis, IN.

### **Invited Talks**

- Alyami, H., Burch, L., **Max, B.,** & Menke, J. (2024, March). *Tips for early career in mathematics education*. Panel Participant Indiana Mathematics Education Research Symposium. Indianapolis, Indiana
- Max, B.,** & Newton, J. (2024, March). *Maintaining authority in the post-secondary mathematics classroom*. Invited presentation at the Purdue University Mathematics Department Teaching Discussion. West Lafayette, Indiana.
- Max, B.** (2022, March). *Mathematics education possibilities for graduate students: A manuscript dissertation*. Keynote Speaker Indiana Mathematics Education Research Symposium. Indianapolis, Indiana.
- Max, B.** (2022, February). *Mathematics education perspective on teaching mathematics*. Invited presentation at the Purdue University Mathematics Department Virtual Teaching Discussion.
- Max, B.,** (2020). *Manuscript dissertation: My experience*. Invited presentation at the Purdue University Mathematics Education Virtual Seminar.
- Max, B.** (2016, 2018, 2020). *Life as a math teacher*. Invited presentation to Purdue University course: Mathematics as a profession and a discipline. West Lafayette, Indiana.

### **Professional Experience**

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|---|------------------|
| <b>Elementary Math Bowl</b>   | 2019, 2022, 2023 |
| Question reviewer, emcee for local competition; organized Purdue students to assist |                  |
| <b>Indiana Mathematics Education Research Symposium</b>                             | 2019, 2020, 2022 |

Faculty facilitator of graduate student presentations

**Global Organizing Committee for International Conference on Mathematics Education 2021 (ICOME-2021)** (<https://edu.icomaas.com/>) May 2021

Scientific Committee member: Reviewer of proposals, organized panels on STEM Education; Moderator for panel on Online Teaching and Learning of Mathematics

**GLOBE+ Virtual Symposium** May 2021

“Scientist Reviewer” of STEM presentations by students

**Reviewer:** 2018-Present

**Journals:** Journal of Mathematics Teacher Education (2020-2023), School Science & Mathematics Journal (2019-2023), Indiana Mathematics Teacher Journal (2018-2023)

**Conference Proceedings:** Psychology of Mathematics Education – North America (PMENA) proposals (2018-2023), International Congress on Mathematical Education (2023)

**Textbook:** *Reconceptualizing Mathematics* (4<sup>th</sup> edition) (2021)

**Standards:** Indiana Department of Education “Middle Grades” mathematics standards (2019)

### **Indiana Department of Education Volunteer Work**

Review Committee for K-8 Indiana Mathematics Standards 2019 – 2020

Committee for Development of Transition Mathematics Course Summer 2018

**Evaluation Team Member,** Evaluated a year-long professional development program for math teachers, teacher leaders, and administrators in K-12 schools 2018-2019

### **Sponsorship Committee Member: PME-NA 39**

Participated in securing donations for the international conference 2017

## **University Experience**

### **Assistant Professor of Practice**

Fall 2023 – Present

Courses Taught:

Mathematics for Elementary Teachers I (Number & Operation; MA 13700)

Mathematics for Elementary Teachers III (Geometry and Measurement; MA 13900)

Modern Mathematics in Science and Society (MA 27900)

### **Senior Lecturer/Course Coordinator**

Purdue University – West Lafayette, IN

Fall 2016-Spring 2023

Coordinator for the three Mathematics for Elementary Teachers courses. Develop and provide lesson plans, syllabi, and materials for a series of three courses, write exams for all courses, supervise teaching assistants, organize graders, maintain course webpages, and support review sessions and tutors.

Courses Taught/Coordinated:

Mathematics for Elementary Teachers I (Number and Operation; MA 137)

Mathematics for Elementary Teachers II (Algebra, Probability, and Statistics; MA 138)

Mathematics for Elementary Teachers III (Geometry and Measurement; MA 139).

### **Teaching Assistant, Purdue University - West Lafayette, IN**

Teaching entire courses, providing pre-service secondary teachers with methods to teaching mathematics that address problem solving, mathematical reasoning, discourse, connections, modeling, and assessment.

Courses Taught/Co-Taught:

Supervised Teaching in Secondary Mathematics Education (EDCI 498)

Fall 2014, Spring 2016

Mathematics in the Secondary Schools (EDCI 425)

Fall 2014, Spring 2015, Fall 2015

Teaching Mathematics in the Middle and Junior High School (EDCI 426)

Spring 2015

**STEM Goes Rural Mathematics Content Coach**

2015-2016

**University Supervisor**

2015-2022

Supervised secondary mathematics student teachers in their classrooms.

**High School Mathematics Teacher**

2003 – 2014

Benton Central Jr/Sr High School, Oxford, IN:

2006 – 2014

Covington High School, Covington, IN:

2005 – 2006

E.L. Furr High School, Houston, TX

2003 – 2005

*Math Department Chair*

2004 – 2005

Courses Taught:

Algebra I/II, Geometry, 7<sup>th</sup> grade Honors Math Enrichment, Algebra A/B, SAT Prep, Remediation

Algebra; (88% pass rate in students who has previously failed Algebra I in 2012)

**Grants**

**Travel Award for attending JimFest at University of Nebraska (\$500)**

2024

**Purdue Span Plan Grant**

2016-2017

**Purdue College of Education Dean's Graduate Student Travel Award**

2015

**Teach For America Financial Aid Award**

2015

**Purdue Graduate Student Travel Award** - Department of Curriculum & Instruction

2014, 2015

**Purdue Student Government Childcare Grant**

2014

**Cookie Jar Grant** for Rachel's Challenge Benton Community Foundation – Fowler, IN

2013

**Benton Community Foundation Grant** for Rachel's Challenge – Fowler, IN

2012

**Research Team Experience**

Creating Algebraic Teaching Communities for Hoosiers (CATCH)

2015-2018

Member of a Math-Science Partnership (MSP) Grant Team working with 60 in-service teachers in Indiana and 4 universities to provide three years of professional development in teaching algebra to middle and high school mathematics and special education teachers.

**Professional Affiliations**

Mathematical Association of America (MAA), 2020 – 2022

National Council of Teachers of Mathematics (NCTM), 2014 – Present

Hoosier Association of Mathematics Teacher Educators (HAMTE), 2014 – Present

Indiana Council of Teachers of Mathematics (ICTM), 2015 - Present

School Science and Mathematics Association (SSMA), 2016 – Present

Association of Mathematics Teacher Educators (AMTE), 2016 - Present

American Educational Research Association (AERA), 2015 – 2018

**Other Experience**

**Purdue Curriculum & Instruction Graduate Student Association Member**

2014-2018

President

2015-2016

**Teach For America Corps Member**, Houston, TX

2003-2005

Served as a member of a national corps of outstanding recent college graduates who commit two years to teach in under-resourced urban and rural public schools.

**Elected Member of MSD of Warren County School Board**

2019-Present

**Music/Choir Director/Organist**, St. Francis Xavier, Attica, IN

2006-Present