

# Zareen Gul Aga

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## Education

- Ph.D. (May, 2018)**      **Mathematics Education, Montclair State University  
Montclair, New Jersey.** Dissertation Title: *Adjunct  
Instructors' Opportunities for Learning through  
Engagement with a Research-based Mathematics  
Curriculum.*
- M.S. (January, 2009)**      Mathematics, Montclair State University,  
Montclair, New Jersey
- B.S. (December, 2005)**      Mathematics, Montclair State University,  
Montclair, New Jersey

## Research and Academic Employment History

### Teaching Experience

#### **Associate Professor (August 2018 – current)**

James Madison University – Harrisonburg, VA

- Teaching Middle and Secondary Mathematics teaching methods courses for undergraduate and graduate students.
- Practicum experience for high school mathematics teachers.

#### **Adjunct Instructor (September 2014 – May 2018)**

Bloomfield College – Bloomfield, NJ

- Planned and taught courses to a racially/ethnically diverse student population.
- Courses included College Algebra, Introduction to Statistics, Statistics, Precalculus, Calculus I, Calculus II and Calculus III.

#### **Instructor (September – December, 2016)**

Montclair State University – Montclair, NJ

- Planned and taught Precalculus, using the Pathways to Calculus curriculum.

#### **Professional Development Facilitator (January – May, 2017)**

Montclair State University – Montclair, NJ

- Facilitated online professional development sessions to support instructors who were implementing the Pathways to Calculus curriculum.

#### **High School Mathematics Teacher (September 2012 – 2014)**

River Dell Regional Schools – River Edge, NJ

- Planned and taught lessons for Algebra I, Algebra II and Geometry.
- Developed efficient ways of implementing Individualized Educational Programs.

- Participated in professional development workshops and applied the teaching methods learned.
- As co-advisor of the River Dell Robotics Club (Hypnotic Robotics), led the team to various FIRST Tech Challenge (FTC) events, served as a judge at an FTC contest and assisted in hosting the FTC Halloween Scrimmage at River Dell High School.

### **High School Mathematics Teacher (September 2010 – 2012)**

Millburn High School – Millburn, NJ

- Planned and taught lessons for Algebra I, Algebra II and Geometry.
- Developed Algebra I curriculum for Millburn School District.
- Collaborated with in-class support teachers.
- Participated in professional development workshops and applied the teaching methods learned.

### **Student Teacher (January 2010 – May 2010)**

Fair Lawn High School – Fair Lawn, NJ

- Planned and taught lessons for Geometry and HSPA preparation courses.

## **Research Experience**

### **Associate Professor (August 2018 – current)**

James Madison University – Harrisonburg, VA

- Research in my current role takes a three-pronged approach towards improving mathematic education by bringing about long-term change, namely:
  - (1) Understanding the needs of pre-service mathematics teachers and developing learning opportunities to improve their teacher preparation experience.
  - (2) Understanding in-service mathematics teachers' challenges and developing supports for them.
  - (3) Fostering collaboration between personnel at institutions of K-12 and higher education.

### **Student Awards, Initiatives, and Research (STAIR) within Research and Scholarship (September 2022 – December 2022)**

- Source, identify, and apply for competitive grants to support student research.
- FYRE (First Year Research Experience) Program, and the Sister2Sister International Student Exchange Program.

### **Doctoral Assistant (September 2014 –June 2018)**

Montclair State University – Montclair, NJ

- Adjunct Mathematics Instructor Resources and Support: Improving Undergraduate Precalculus Teaching and Learning Experience, Wipro Science Teacher Leadership Program, Comparing graph use in STEM textbooks and practitioners' journals, Teacher understandings of graphing rules or conventions, Creative University School Partnership - Mathematics Science Partnership, teacher professional development program, US & Chile Undergraduate Science Student Exchange Program.

*Grant writing, data collection in the form of conducting in-person interviews with teachers, classroom observations, attending teachers' group meetings, data management, data preparation and analysis. Academic writing and presentation of findings at conferences.*

**Associate Research Analyst (April 2008 – September 2009)**

Ipsos Vantis – Parsippany, NJ

- Designed meaningful survey questionnaires that represented key business issues.
- Monitored field progress and ensured timely completion of a project.
- Data Analysis: Organized data and created efficient tables to facilitate analysis. Performed quantitative data analysis (observatory and confirmatory) on survey data to answer client questions. Summarized the statistical results into reports that included meaningful conclusions and recommendations.

**Graduate Assistant/Math Coach (January 2006- March 2008)**

PRISM Group/Montclair State University – Montclair, NJ

- Supervised students in the Math Lab.
- Worked as a Math Coach and coordinated implementation of activities for the NJ State Connected Math program.
- Assisted PRISM Math Specialists with coaching functions in various educational environments.
- Performed data analysis on group research activities and maintained institute's database.

**Publications**

**Journals and Book Chapters**

- Aga, Z. G. (2025). Community-based mathematical modeling tasks as implemented by pre-service teachers in their practicum classrooms. *Perspectives on Critical Issues in Education*. <https://docs.google.com/document/d/1h--A6F7DfxRm2XSk9x424CZzMRde-naq/edit?tab=t.0>
- Aga, Z. G., & Sawyer, A. (2025). What are Mathematics Teacher Educators' Perceptions towards Equity-based Teaching Practices? *GATEways to Teacher Education*. 34(1), 79-94 [https://issuu.com/gaate/docs/georgia\\_association\\_of\\_teacher\\_educators\\_vol.34?fr=sMTE1Mjg0OTgxMjQ](https://issuu.com/gaate/docs/georgia_association_of_teacher_educators_vol.34?fr=sMTE1Mjg0OTgxMjQ)
- Sawyer, A., & Aga, Z. G. (2025). A Mile High and an Inch Deep: Exploring ChatGPT as a Mathematics Curriculum Development Tool. *School Science and Mathematics*. <https://doi.org/10.1111/ssm.18348>
- Aga, Z. G., Sawyer, A. G., & Wolfe, M. (2024). More confidence more critical: Investigating secondary mathematics preservice teachers' use of an Artificial Intelligence chatbot as a curriculum development tool. *American Journal of Creative Education*. 7(2), 63–78. <https://doi.org/10.55284/ajce.v7i2.1278>
- Sawyer, A. G. & Aga, Z. (2024). Counterexamples to Demonstrate Artificial Intelligence Chatbot's Lack of Knowledge in the Mathematics Education Classrooms. *Association of Mathematics Teacher Education's Connections*. <https://amte.net/sites/amte.net/files/Connections%20%28Sawyer%29.pdf>
- Aga, Z. G. (2024). Mathematics Prospective Teachers' Perceptions about Culturally Responsive Mathematics Teaching and Teaching Mathematics for Social Justice. *The Educational Forum*.
- Aga, Z. G., & Abbas, I. (2024). Actions taken by Pakistani women to navigate their culture. *Journal of Research and Reviews in Social Sciences Pakistan*.
- Bae, Y., Satyam, V. R., & Aga, Z. G. (2024). Collaborative practices in virtual group work on dynamic geometry tasks. *Journal of the Korean Society of Mathematical Education Series D: Research in Mathematical Education*.
- Ghosh-Hajra, S., & Aga, Z. G. (2024). How community-based mathematics modeling can support Calculus I students to learn about problem-based learning? *PRIMUS*.

- Sawyer, A. G., & **Aga, Z. G.** (2024) Counterexamples to Demonstrate Artificial Intelligence Chatbot's Lack of Knowledge in the Mathematics Education. *Connections*.
- Rahman, Z. G.** (2023). Pre-service Mathematics Teachers' Experience with Productive Struggle. *The Educational Forum*.
- Rahman, Z. G.** & Wallace, A. (2023). Opportunities for elementary pre-service teachers' learning through statistical data analysis in their methods courses. *Virginia Mathematics Teacher*.
- Rahman, Z. G.**, Satyam, V., & Bae, Y. (2022). Navigating Mathematics Teacher Preparation During Time of Crisis. *Journal of Humanistic Mathematics*.
- Shoffner, M., Webb, A., Doubet, K., Jaffee, T., & **Rahman, Z. G.** (2021) Authentic Selves in Virtual Spaces: Reflections During a Pandemic. In *The Corona Chronicles: Necessary Narratives in Uncertain Times*.
- Rahman, Z. G.**, Murray, E., & Golnabi, A. H. (2021). Adjunct Mathematics Instructor Resources and Support Contributing Towards Job Satisfaction. *PRIMUS*.
- Paoletti, T., Lee, H. Y., **Rahman, Z. G.**, Madhavi Vishnubhotla, M., & Basu, D. (2020) Comparing graphical representations in mathematics, science, and engineering textbooks and practitioner journals, *International Journal of Mathematical Education in Science and Technology*, DOI: [10.1080/0020739X.2020.1847336](https://doi.org/10.1080/0020739X.2020.1847336)
- Trabona, K., Taylor, M., Klein, E., Munakata, M., & **Rahman, Z. G.** (2019) Collaborative professional learning: cultivating science teacher leaders through vertical communities of practice, *Professional Development in Education*, DOI: [10.1080/19415257.2019.1591482](https://doi.org/10.1080/19415257.2019.1591482)
- Rahman, Z. G.**, Munakata, M., Klein, E., Taylor, M., & Trabona, K., (2018). Growing our own: Fostering teacher leadership in K-12 science teachers through school-university partnerships. In J. Hunzicker (Ed.), *Teacher Leadership in Professional Development Schools* (pp. 235-253). Bingley, UK: Emerald Publishing.
- Klein, E., Taylor, M., Munakata M., Trabona, K. & **Rahman, Z. G.**, McManus, J. (2018). Navigating teacher leaders' complex relationships using a distributed leadership framework. *Teacher Education Quarterly*.
- Taylor, M., Klein, E. J., Munakata, M., Trabona, K., **Rahman, Z. G.**, & McManus, J. (2018). Professional development for teacher leaders: using activity theory to understand the complexities of sustainable change. *International Journal of Leadership in Education*.
- Aga, Z. G.**, & Ghosh-Hajra, S. (Under review). Boundary Interactions between Mathematics Methods and Content Courses to Improve Mathematics Teacher Education. *Teaching Education*.
- Aga, Z. G.**, & Park, H. (Under review). Prospective Teachers' Perceptions of Learning and Teaching Social Justice in Mathematics Classrooms. *New Jersey Mathematics Teacher Journal*.
- Aga, Z. G.**, Lim, S., & Kim, Y. (Under review). Secondary mathematics field experience personnels' perceptions about mathematics identity. *Teacher Education Quarterly*.
- Aga, Z. G.**, Lim, S., & Kim, Y. (Under review). Building Instruction on Students' Funds of Knowledge Through Mathematical Storytelling. *Issues in Teacher Education*.
- Sawyer, A., Sutherland, P., & **Aga, Z. G.** (Under review). Artificial Stupidity: Artificial Intelligence Chatbot's Inability to Multiply. *Mathematics Teacher: Learning and Teaching Pre-K-12*.
- Sawyer, A. G., **Aga, Z. G.**, & Wolfe, M. (Under review). Lesson to Engage in Critical Thinking and Analysis of Generative Artificial Intelligence. Embracing Artificial Intelligence in the Classroom.

### Conference Proceedings

- Aga, Z. G.**, Lim, S., & Kim, Y. (2024). High school Field Experience Personnel's Perceptions about Mathematics Identity. *Proceedings of the 46<sup>th</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. Cleveland, Ohio.
- Aga, Z. G.** (2023). *Connections pre-service teachers make between social justice and mathematics*. Proceedings of the Twenty Fifth Annual SIGMAA conference on Research in Undergraduate Mathematics Education. Omaha, Nebraska.

- Rahman, Z. G.**, (2022). Prospective Teachers' Experience Developing Culturally Responsive Mathematics Lessons in a Middle School Mathematics Methods Course. *Proceedings of the 44<sup>th</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. Nashville, Tennessee.
- Rahman, Z. G.**, (2021). How Adjunct Instructors' Perceptions about Implementing Research-based Mathematics Curriculum may Influence their Professional Development Needs. *Proceedings of the 43<sup>rd</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. Philadelphia, Pennsylvania.
- Rahman, Z. G.**, Bae, Y., & Satyam, V. R. (2021). In-service Teachers' Perceptions about Virtual Collaboration in Mathematics Classrooms: Challenges and Possibilities. *Proceedings of the 43<sup>rd</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. Philadelphia, Pennsylvania.
- Rahman, Z. G.**, Bae, Y., & Satyam, V. R. (2021). Fostering Virtual Collaboration in Geometry: Analyzing Task Design and Technology. *Proceedings of the 43<sup>rd</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. Philadelphia, Pennsylvania.
- Bae, Y., **Rahman, Z.**, & Satyam, V. R. (2021). *Virtual Group Work on a Shared Dynamic Geometry Task in an Online Synchronous Classroom Environment*. In 2021 Joint Mathematics Meetings (JMM). AMS.
- Rahman, Z. G.** (2020). Pre-service Mathematics Teachers' Engagement with Cognitive Demand of Mathematics Tasks. *Proceedings of the Twenty Third Annual SIGMAA conference on Research in Undergraduate Mathematics Education*. Boston, Massachusetts.
- Rahman, Z. G.**, Miller, E & Satyam, R. (2020). How can regional RUME conferences support inclusion into the larger RUME community? *Proceedings of the Twenty Third Annual SIGMAA conference on Research in Undergraduate Mathematics Education*. Boston, Massachusetts.
- Rahman, Z. G.** (2019). Adjunct Instructors' Opportunities for Learning Through Implementing a Research-based Mathematics Curriculum. *Proceedings of the Twenty Second Annual SIGMAA conference on Research in Undergraduate Mathematics Education*. Oklahoma City, Oklahoma.
- Nuzzi, J., Murray, E, Vishnubhotla, M., **Rahman, Z. G.**, Golnabi, A., & Paoletti, T. (2019). *Understanding the Impact of Supports on Adjunct Mathematics Instructor Knowledge*. *Proceedings of the Twentieth Annual SIGMAA conference on Research in Undergraduate Mathematics Education*. Oklahoma City, Oklahoma.
- Rahman, Z. G.**, (2018). *Analyzing Adjunct Instructor's Engagement with a Research-based Precalculus Curriculum*. *Proceedings of the 40<sup>th</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. Indianapolis, Indiana.
- Rahman, Z. G.**, Murray, E., Golnabi, A., (2017). Supports found beneficial and challenges faced by adjunct instructors when implementing a reform-oriented curriculum. *Proceedings of the 39<sup>th</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. Indianapolis, Indiana.
- Paoletti, T., Silverman, J., Vishnubhotla, M., **Rahman, Z. G.**, Monahan, C., & Febgermia, E., (2017). Graphing rules or conventions? Teacher understandings. *Proceedings of the 39<sup>th</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. Indianapolis, Indiana.
- Golnabi, A., Murray E., & **Rahman, Z. G.** (2017). Improving undergraduate STEM education through adjunct mathematics instructor resources and support (IUSE-AMIRS). *Proceedings of the Nineteenth Annual SIGMAA conference on Research in Undergraduate Mathematics Education*. San Diego, California.
- Paoletti, T., Vishnubhotla, M., **Rahman, Z. G.**, Seventko, J., & Basu, D. (2017). Comparing graph use in STEM textbooks and practitioners journals. *Proceedings of the Nineteenth Annual SIGMAA conference on Research in Undergraduate Mathematics Education*. San Diego, California.

**Rahman, Z. G.,** Basu, D., & Yu, K., (2016). Exploring connections Between Teachers' Mathematical Content Knowledge and its Relevance to Teaching K-12 Mathematics. *Proceedings of the 38th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. Tucson, AZ: The University of Arizona.

**Rahman, Z. G.,** Basu, D., & Yu, K., (2016). Using the chain rule to develop secondary school teachers' Mathematical Knowledge for Teaching, focused on the rate of change: Secondary mathematics teachers' knowledge of the chain rule and its' impact on their teaching of the rate of change. *Proceedings of the Eighteenth Annual SIGMAA conference on Research in Undergraduate Mathematics Education*. Pittsburgh, PA.

## **Presentations**

### **National/International**

**Aga, Z. G.** (2025). *Academic Dialogue to Rethink Human Identity beyond the Nation State Paradigm*. Osaka Metropolitan University Joint Seminar Series. Osaka, Japan.

Bae, Y., Satyam, V. R., & **Aga, Z. G.** (2025). *Collaborative Practices in Virtual Group Work on Dynamic Geometry Tasks*. EARCOME-9 Conference, Siheung, Korea.

**Aga, Z. G.** (2025). *CAREER: Preparing Middle and High School Pre-service Teachers for Critical Mathematics Education*. Presentation at the DRK 12 Cadre Conference. Arlington, Virginia.

**Aga, Z. G.,** Kim, Y., & Lim, S. (2025). Equity-Based Mathematics Teaching Practices in Pre-Service Teachers' Lesson Plans. Presentation at the Twenty-Seventh Annual SIGMAA conference on Research in Undergraduate Mathematics Education. Alexandria, Virginia.

Ghosh-Hajra, S., & **Aga, Z. G.** (2025). Supporting Students' Engagement in Community-based Mathematics Modeling. Simiode Expo 2025 conference. Sacramento, California

**Aga, Z. G.,** Lim, S., & Kim, Y. (2024). *High school Field Experience Personnel's Perceptions about Mathematics Identity*. The Forty-Sixth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Cleveland, Ohio.

**Aga, Z. G.** (2024). *Prospective teachers' Experience with a task designed to elicit empathy for English Language learners in a mathematics classroom*. Fifteenth International Congress on Mathematics Education. Sydney, Australia.

Sawyer, A., & **Aga, Z. G.** (2024). *Exploring an Artificial Intelligence Chatbot as a Mathematics Curriculum Development Tool*. Mid-Atlantic Research for Undergraduate Mathematics Education Conference. Charlottesville, Virginia.

**Aga, Z. G.** (2024). *Connections prospective teachers make between mathematics and social justice in their methods courses*. The Twenty-Eighth Annual Association of Mathematics Teacher Educators Conference. Orlando, Florida.

**Aga, Z. G.,** Yilmaz, Z., Naresh, N., Atabas, S., Kanbir, S., Zolfaghari, M., & Lee, Y. (2024). *Unveiling Narrative Identities in the Preservice Teacher Education Context: Perspectives from International Mathematics Educators*. The Twenty-Eighth Annual Association of Mathematics Teacher Educators Conference. Orlando, Florida.

**Aga, Z. G.,** (2023). *Supporting Calculus I students' engagement in problem-based learning through community-based mathematics modeling*. North-East Research for Undergraduate Mathematics Education Conference, Online Conference.

**Aga, Z. G.,** Warburton, T. & Gonzalez, M. (2023). Connecting partners to support research in social justice mathematics education. TODOS Conference. Albuquerque, New Mexico.

**Aga, Z. G.** (2023). *Connections pre-service teachers make between social justice and mathematics*. Presentation at the Twenty-Fifth Annual SIGMAA conference on Research in Undergraduate Mathematics Education. Omaha, Nebraska.

- Aga, Z. G.** (2023). *Preservice Teachers' Experience with a Task Designed to Elicit Empathy for English Language Learners*. The Twenty-Seventh Annual Association of Mathematics Teacher Educators Conference. New Orleans, Louisiana.
- Aga, Z. G. & Sawyer, A.** (2023). *What are Mathematics Teacher Educators' Perceptions towards Equity-based Teaching Practices?* The Twenty-Seventh Annual Association of Mathematics Teacher Educators Conference. New Orleans, Louisiana.
- Rahman, Z. G.,** (2022, November). *Prospective Teachers' Experience Developing Culturally Responsive Mathematics Lessons in a Middle School Mathematics Methods Course*. The Forty-Fourth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Nashville, Tennessee.
- Rahman, Z. G.,** (2022, October). *Prospective Mathematics Teachers' Connections between Probability/Statistics and Social Justice Standards*. North-East Research for Undergraduate Mathematics Education Conference, Online Conference.
- Rahman, Z. G.** (2022, February). *Prospective Teachers' Experience Developing Culturally Responsive Mathematics Lessons in a Middle School Mathematics Methods Course*. Presented at the Twenty-Sixth Annual Association of Mathematics Teacher Educators Conference. Henderson, Nevada.
- Ghosh-Hajra, S. & **Rahman, Z. G.** (2022, February). *Micro-teaching in a Mathematics Content Course: An Analysis of Preservice Teachers' Learning*. Presented at the Twenty-Sixth Annual Association of Mathematics Teacher Educators Conference. Henderson, Nevada.
- Rahman, Z. G.,** (2021, November). *Mathematics Prospective Teachers' Perceptions about Culturally Responsive Mathematics Teaching and Teaching Mathematics for Social Justice*. North East Research for Undergraduate Mathematics Education Conference, Online Conference.
- Rahman, Z. G.,** (2021, October). *How Adjunct Instructors' Perceptions about Implementing Research-based Mathematics Curriculum may Influence their Professional Development Needs*. 43<sup>rd</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Philadelphia, Pennsylvania.
- Rahman, Z. G.,** Bae, Y., & Satyam, V. R. (2021, October). *In-service Teachers' Perceptions about Virtual Collaboration in Mathematics Classrooms: Challenges and Possibilities*. 43<sup>rd</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Philadelphia, Pennsylvania.
- Rahman, Z. G.,** Bae, Y., & Satyam, V. R. (2021, October). *Fostering Virtual Collaboration in Geometry: Analyzing Task Design and Technology*. 43<sup>rd</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Philadelphia, Pennsylvania.
- Bae, Y., Satyam, V. R., & **Rahman, Z. G.** (2021, August). *Collaborative Practices in Virtual Group Work on Dynamic Geometry Tasks*. MAA MathFest. Virtual conference.
- Bae, Y., **Rahman, Z.,** & Satyam, V. R. (2021, January). *Virtual Group Work on a Shared Dynamic Geometry Task in an Online Synchronous Classroom Environment*. Joint Mathematics Meetings (JMM). AMS.
- Rahman, Z. G.** (2021, April). *Pre-service Mathematics Teachers' Experience with Productive Struggle*. Presented at the Southern Georgia Mathematics Conference (SGMC). Virtual conference.
- Rahman, Z. G.,** & Ghosh-Hajra, S. (2021, February). *Analyzing the benefits of Micro-teaching as a learning tool in mathematics content and methods courses*. Poster presented at the Twenty-Fifth Annual Association of Mathematics Teacher Educators Conference. Virtual conference.
- Bae, Y., **Rahman, Z. G.,** & Satyam, V. R. (2021, January). *Virtual Group Work on a Shared Dynamic Geometry Task in an Online Synchronous Classroom Environment*. Contributed paper presented at the Joint Mathematical Meetings. Virtual conference.
- Ghosh Hajra, S. & **Rahman, Z. G.,** (2020, October). *Bridging the gap between content and methods courses for pre-service teachers*. North East Research for Undergraduate Mathematics Education Conference, Online Conference.

- Rahman, Z. G.,** Bae, Y., & Satyam, V. R. (2020, September). *Unpacking the relationship between STEM departmental culture and faculty response to the COVID-19 pandemic*. Presentation at Mathematics Education in the Era of COVID-19: The Cases of Korea, Singapore, and USA. Online webinar.
- Rahman, Z. G.** (2020, February). *Pre-service Mathematics Teachers' Engagement with Cognitive Demand of Mathematics Tasks*. Presentation at the Twenty Third Annual SIGMAA conference on Research in Undergraduate Mathematics Education. Boston, Massachusetts.
- Rahman, Z. G.,** Miller, E. & Satyam, V. R. (2020, February). *How can regional RUME conferences support inclusion into the larger RUME community?* Presentation at the Twenty Third Annual SIGMAA conference on Research in Undergraduate Mathematics Education. Boston, Massachusetts.
- Rahman, Z. G.,** (2019, October). *Challenges faced by adjunct instructors in implementing high cognitive demand tasks*. North East Research for Undergraduate Mathematics Education Conference. York College, Queens, NY.
- Rahman, Z. G.** (2019, February). *Adjunct Instructors' Opportunities for Learning Through Implementing a Research-based Mathematics Curriculum*. Presentation at the Twenty Second Annual SIGMAA conference on Research in Undergraduate Mathematics Education. Oklahoma City, Oklahoma.
- Nuzzi, J., Murray, E, Vishnubhotla, M., **Rahman, Z. G.,** Golnabi, A., & Paoletti, T. (2019, February). *Understanding the Impact of Supports on Adjunct Mathematics Instructor Knowledge*. Presentation at the Twenty Second Annual SIGMAA conference on Research in Undergraduate Mathematics Education. Oklahoma City, Oklahoma.
- Murray, E., Golnabi, A., **Rahman, Z.,** Vishnubhotla, M., & Nuzzi, J., (2019, January). *Adjunct Mathematics Instructor Resources and Support: Improving Undergraduate Precalculus Teaching and Learning Experience*. Poster presented at the Joint Mathematical Meetings. Baltimore, MD.
- Rahman, Z. G.,** (2018, November). *Analyzing Adjunct Instructor's Engagement with a Research-based Precalculus Curriculum*. Poster presented at the 40th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Greenville, SC: University of South Carolina.
- Rahman, Z. G.,** Munakata, M., Klein, E. J., Taylor, M. & Trabona, K. (2018, April). *What Do Emerging Science Teacher Leaders Talk About? Unpacking Feedback in a Vertically Aligned Professional Learning Community*. Paper presented at annual meeting of American Education Research Association, New York, NY.
- Rahman, Z. G.,** Murray E., & Golnabi, A., (2018, February). *Adjunct Instructor Learning Through Implementing Research Based Curriculum*. Presentation at the Nineteenth Annual SIGMAA conference on Research in Undergraduate Mathematics Education. San Diego, CA.
- Paoletti, T., Silverman, J., Moore, K., Vishnubhotla, M., **Rahman, Z. G.,** & Monahan, C., (2018, February). *Reasoning about Quantities or Conventions: Investigating Shifts in In-service Teachers' Meanings after an On-line Graduate Course*. Presentation at the Nineteenth Annual SIGMAA conference on Research in Undergraduate Mathematics Education. San Diego, CA.
- Rahman, Z. G.,** Murray, E., Golnabi, A., (2017, October). *Supports Found Beneficial and Challenges Faced by Adjunct Instructors when Implementing a Reform-Oriented Curriculum*. Paper presented at the 39<sup>th</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Indianapolis, IN.
- Trabona, K., **Rahman, Z. G.,** Klein, E., Munakata, M., & Taylor, M. (2017, April) *Collaborative Professional Learning: Cultivating Science Teacher Leaders Through Vertical Learning Communities*. Paper presented at annual meeting of American Education Research Association, San Antonio, TX.
- Munakata, M., Klein, E., Taylor, M., Trabona, K., & **Rahman, Z. G.,** (2017, April). *Quality of Feedback in Vertically Aligned PLCs*. Paper presented at National Association for Research in Science Teaching Conference, San Antonio, TX.



- Krupa, E., Munakata, M., **Rahman, Z. G.**, & Monahan, C. (2017, February) *Instructional Rounds as a Model of Yearlong Professional Development Support*. Paper presented at the Twenty-First Annual Association of Mathematics Teacher Educators Conference. Orlando, Florida
- Trabona, K., Taylor, M., Klein, E., Munakata M., & **Rahman, Z. G.**, (2017, March). *Navigating Teacher Leadership through Vertical Teams*. Paper presented at the International Teacher Leadership Conference, Miami, Florida.
- Golnabi, A., Murray E., & **Rahman, Z. G.** (2017, February). *Improving Undergraduate STEM Education Through Adjunct Mathematics Instructor Resources and Support (IUSE-AMIRS)*. Presentation at the Nineteenth Annual SIGMAA conference on Research in Undergraduate Mathematics Education. San Diego, California.
- Paoletti, T., Vishnubhotla, M., **Rahman, Z. G.**, Seventko, J., & Basu, D. (2017, February). *Comparing Graph Use in STEM Textbooks and Practitioners Journals*. Presentation at the Nineteenth Annual SIGMAA conference on Research in Undergraduate Mathematics Education. San Diego, California.
- Rahman, Z. G.**, Basu, D., & Yu, K., (2016, November). *Exploring Connections Between Teachers' Mathematical Content Knowledge and its Relevance to Teaching K-12 Mathematics*. Poster presented at the 38th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Tucson, AZ: The University of Arizona.
- Klein, E., Taylor, M., Munakata M., McManus, J., **Rahman, Z. G.**, & Trabona, K. (2016, April). *Nurturing Teacher Leaders through Actions and Agency: A Differentiated Science Teacher Leadership Program*. Paper presented at annual meeting of American Education Research Association, Washington DC.
- Rahman, Z. G.**, Basu, D., & Yu, K., (2016, February). *Using the Chain Rule to Develop Secondary School Teachers' Mathematical Knowledge for Teaching, Focused on the Rate of Change: Secondary Mathematics Teachers' Knowledge of the Chain Rule and its' Impact on Their Teaching of the Rate of Change*. Poster presented at annual Research in Undergraduate Mathematics Education, Pittsburgh, PA.
- Rahman, Z. G.**, (2015, June). *Fostering Science Teacher Leadership for Sustainable Change*. Paper presented at annual meeting of International Society for Teacher Education, Fairfield, NJ.
- Taylor, M., Klein, E., Munakata M., McManus, J., Trabona, K. & **Rahman, Z. G.**, (2015, April). *Fostering Science Teacher Leadership for Sustainable Change*. Paper presented at annual meeting of American Education Research Association, Chicago, IL.

#### **Invited Presentations**

- Aga, Z. G** (2025). *Education with International Perspectives*. Osaka, Japan.
- Ghosh-Hajra, S., & **Aga, Z. G** (2025). *Supporting Students' Engagement in Community-based Mathematics Modeling*. SIMIODE EXPO 2025 Conference (Virtual conference).
- Aga, Z. G.**, (2023, March). *Prospective Teachers' Experience Developing Culturally Responsive Mathematics Lessons in a Middle School Mathematics Methods Course*. Virginia Commonwealth University, Richmond, VA.
- Rahman, Z. G.**, (2020, January). *Adjunct Instructors' Opportunities for Learning Through a Research-based Mathematics Curriculum*. Virginia Commonwealth University, Richmond, VA.
- Rahman, Z. G.**, Golnabi, A., & Murray, E., (2017, April). *Pathways to Precalculus Project and Implementation at Montclair State University*. The Mathematical Association of America New Jersey Section Meeting held in Conjunction with the 14<sup>th</sup> annual Garden State Undergraduate Mathematics Conference, Ewing, NJ.

#### **Local**

- Satyam, V. R. & **Rahman, Z. G.** (2024, March) *Practices for Preservice Teacher Collaboration on Geometry Tasks*. Virginia Association of Mathematics Teacher Educators, Richmond, VA.

- Sawyer, A. & **Rahman, Z. G.** (2024, March) *Discovering Artificial Intelligence Chatbot's Limitations as Elementary Mathematics Curriculum Development Tools*. Virginia Association of Mathematics Teacher Educators, Richmond, VA.
- Rahman, Z. G.** (2022, October) *Prospective Teachers' Perceptions about Social Justice in Mathematics Classrooms*. Virginia Association of Mathematics Teacher Educators, Richmond, VA.
- Rahman, Z. G.** (2021, October) *Pre-service Teachers' Experience with Virtual Micro-teaching in a Middle School Mathematics Methods Course*. Virginia Association of Mathematics Teacher Educators, Harrisonburg, VA.
- Rahman, Z. G.,** & Wallace, A. (2020, August) *Opportunities for elementary pre-service teachers' learning through statistical data analysis in their methods courses*. Virginia Association of Mathematics Teacher Educators, Online Conference.
- Rahman, Z. G.,** (2019, August). *Teaching Student-centered Mathematics in Middle and Secondary Classrooms*. Virginia Association of Mathematics Teacher Educators, Richmond, VA.
- Rahman, Z. G.,** (2018, October). *Adjunct Instructors' Opportunities for Learning Through a Research-based Mathematics Curriculum*. North East Research for Undergraduate Mathematics Education Conference, New Brunswick, NJ
- Greenstein, S., Fernandez, E., & **Rahman, Z. G.,** (2017, June). *Developing Teacher Knowledge through Mathematical Making*. New Jersey Association of Mathematics Teacher Educators Eleventh Annual Conference, Ewing, NJ
- Rahman, Z. G.,** (2017, April). *Precalculus Course-coordination and Adjunct Instructor Support*. Poster presented at Montclair State University Student Research Symposium, Montclair, NJ.
- Rahman, Z. G.,** Vishnubhotla, M., Monahan, C., & Febgermia, E. (2017, April). *Graphing Rules or Conventions? Teachers' Understandings*. Paper presented at Montclair State University Student Research Symposium, Montclair, NJ.
- Vishnubhotla, M., **Rahman, Z. G.,** Seventko, J., & Basu, D. (2017, April). *Comparing Graphs: School Math Textbooks, STE Textbooks and Journals*. Paper presented at Montclair State University Student Research Symposium, Montclair, NJ.
- Rahman, Z. G.,** Basu, D., & Yu, K., (2016, April). *Using the Chain Rule to Develop Secondary School Teachers' Mathematical Knowledge for Teaching, Focused on the Rate of Change: Secondary Mathematics Teachers' Knowledge of the Chain Rule and its' Impact on Their Teaching of the Rate of Change*. Poster presented at Montclair State University Student Research Symposium. Montclair, NJ.
- Rahman, Z. G.,** (2015, April). *A Reciprocal Approach to Promoting Study Abroad in STEM: A model for undergraduate STEM research and international collaborations*. Paper presented at Montclair State University Student Research Symposium, Montclair, NJ.
- McManus, J., Trabona, K. & **Rahman, Z. G.,** (2015, April). *Fostering Science Teacher Leadership for Sustainable Change*. Paper presented at Montclair State University Student Research Symposium, Montclair, NJ.

## Grants

- National Science Foundation – Early career grant, for project titled, CAREER: Preparing Middle and High School Pre-service Teachers for Critical Mathematics Education (2023): \$831,028
- The Provost Faculty Diversity Curriculum Grant, for project titled, Community building for cohesive mathematics teacher preparation focused on culturally responsive mathematics teaching (2022): \$3,000
- 4-VA Grant, for project titled, Productive Struggle and High Cognitive Demand Tasks – Implementing Emergent Findings into K-12 classrooms (2021): \$20,000

- The Provost Faculty Diversity Curriculum Grant, for project titled, Project for the Development of a Culturally Responsible Mathematics Pedagogy for Future Math Teachers (2021): \$3,000
- Martha B. and Guy M. Jones Education Endowment Grant, for project titled, Helping Students do Math! Developing Teacher Knowledge of Cognitive Demand and Productive Struggle (2020): \$8,300
- Received 1st Year Faculty Recognition award for grant writing. *The Noftsinger Celebration of Madison Scholarship and Recognition*, James Madison University (2019)
- Level II Madison Fellowship Grant, focusing on Professional Grant Development (2019): \$2,500.
- Accepted into the Fall 2019 Madison Fellowship: Professional Grant Development. Accepted fellows worked together to advance *scholarly and professional grant development skills*.
- 4-VA Grant, for project titled, Math on a Sphere: Deriving Context from Geophysical Data (2018): \$5,000

## **Professional Development and Workshops**

Sawyer, A. G., Wolfe, M., & **Aga, Z. G.** (2025, May) *AMTE Webinar: Generative Artificial Intelligence Chatbots in the Mathematics Classroom: What Should You Know and How To Teach Caution*. Association of Mathematics Teacher Educators.

**Aga, Z. G.** (2025, Spring Semester) *Mathematical Storytelling*. Professional development for middle and high school teachers (Harrisonburg city, Rockingham county, and Augusta county, VA), Series of professional development workshops with ongoing support.

**Aga, Z. G.** (2024, Fall Semester) *Developing Students' Mathematical Identity*. Professional development for middle and high school teachers (Harrisonburg city, Rockingham county, and Augusta county, VA), Series of professional development workshops with ongoing support.

**Aga, Z. G.** (2024, Spring Semester) *Equity-based Mathematics Teaching Practices and Developing Students' Mathematical Identity*. Professional development for middle and high school teachers (Harrisonburg city, Rockingham county, and Augusta county, VA), Series of professional development workshops with ongoing support.

**Aga, Z. G.** (2023, Fall Semester) *Equity-based Mathematics Teaching Practices*. Professional development for middle and high school teachers (Harrisonburg city, Rockingham county, and Augusta county, VA), Series of professional development workshops with ongoing support.

**Aga, Z. G.** (2023, Spring Semester) *Leveraging Community-Based Mathematical Modeling*. Math for America, 3-day online workshop.

**Rahman, Z. G.** (2022, Fall Semester) *Madison Fellowship: Developing and Evaluating Equitable Teaching Practices*. Series of professional development workshops for faculty at James Madison University. Center for Faculty Innovation.

**Rahman, Z. G.** (2022, October) *Teaching math to support English Language Learners*. Professional development for middle and high school teachers (Harrisonburg city, Rockingham county, and Augusta county, VA), 1-day online workshop with ongoing support.

**Rahman, Z. G.** (2022, February) *Teaching math to support English Language Learners*. Professional development for Harrisonburg middle and high school teachers, 1-day online workshop with ongoing support.

**Rahman, Z. G.**, (2021, November). *Redefining Inclusive Education a focus on culturally responsive pedagogy and teaching for social justice*. Osaka City University, Online seminar.

**Rahman, Z. G.** (2021, September) *Developing context-based tasks*. Professional development for Harrisonburg middle and high school teachers, 1-day online workshop with ongoing support.

**Rahman, Z. G.** (2021, February) *Virtual Collaborative Learning of Mathematics*. Professional development for Harrisonburg middle and high school teachers, 1-day online workshop with ongoing support.

- Rahman, Z. G.** (2020, December) *Bringing Culturally Relevant Mathematics Pedagogy Into the Classroom*. Math for America, 3-day online workshop.
- Rahman, Z. G.** (2020, October) *Cognitive Demand of Tasks and Productive Struggle for Improved Student Learning*. Professional development for Harrisonburg middle and high school teachers, 1-day online workshop with ongoing support.
- Uscanga, R, Apkarian, N, **Rahman, Z. G.**, Mesa, V. (2020, February) *Speaking with not speaking for: Thoughtful allyship among womxn*. Mentoring and Partnership for Women in RUME. Boston, MA.
- Rahman, Z. G.**, & Arnold, L. (2019, August) *Effective Questioning*. Professional development for Staunton middle and high school teachers. Staunton, VA.
- Rahman, Z. G.**, & Arnold, L. (2019, May) *Best Practices for Teaching and Learning of Mathematics*. Professional development for Staunton middle and high school teachers. Staunton, VA.
- Rahman, Z. G.**, & Arnold, L. (2019, April). *Facilitating Mathematical Discourse*. Professional development for Staunton middle and high school teachers. Staunton, VA.
- Rahman, Z. G.**, & Arnold, L., (2018, October). *Number Talks in the High School Classroom: Facilitating Mathematical Discourse*. Presentation at the V2CTM Fall meeting, Bridgewater, VA.
- O'Bryan, A. & **Rahman, Z. G.**, (2018, June). *Dynamic Iconic Problems in Algebra*. Presentation at the TODOS Mathematics for ALL 2018 Conference. Scottsdale, AZ.
- Hauk, S. & **Rahman, Z. G.**, (2018, February). *Equity and Social Justice in Research and Teaching*. Mentoring and Partnerships for Women in RUME. San Diego, CA.

### **Relevant Professional Affiliations and Awards**

- James Madison University, College of Education Madison Scholar Award, 2025.
- North American Chapter of the International Group for the Psychology of Mathematics Education, Steering Committee chair (2024-2026).
- North American Chapter of the International Group for the Psychology of Mathematics Education, Scholarship sub-committee chair (2023-2025).
- North American Chapter of the International Group for the Psychology of Mathematics Education, Equity sub-committee member (2023-2025).
- North American Chapter of the International Group for the Psychology of Mathematics Education, Steering Committee elected member (2022-2025).
- James Madison University, College of Education Diversity Award, 2022.
- Association of Mathematics Teacher Educators (AMTE) Service, Teaching and Research (STaR) Fundraising Committee (2021-2024)
- AMTE STaR Fellow - 2019 Cohort
- Mid-Atlantic Research in Undergraduate Education (MA-RUME) Founding member and continuing leadership team member (2019 - Current)
- Association of Mathematics Teacher Educators
- Virginia Association of Mathematics Teacher Educators
- National Council of Teachers of Mathematics
- American Mathematical Society

### **Advising**

- Student capstone project.
- Advising undergraduate and graduate students.

### **Mentoring**

Served as a mentor for:

- Doctoral Students (Montclair State University) – 2023-2025.

- College of Education DEI Fellows Program - Spring 2021 - Summer 2022.
- Doctoral student (Morgan State University) through Preparing Future Faculty program – Fall 2019 - current.
- Graduate student (James Madison University) through Martha B. and Guy M. Jones Education Endowment Grant - Spring 2021.
- Undergraduate student (James Madison University) through 4-VA grant - Spring 2019 – Fall 2019.

### **Reviewer**

- Association of Mathematics Teacher Educators Conference.
- Research in Undergraduate Mathematics Education Conference.
- Research in Undergraduate Mathematics Education Conference – Mid-Atlantic chapter.
- Psychology of Mathematics Education – North America Conference.
- American Educational Research Association Conference.
- The Educational Forum – Routledge.
- Teachers College Record.
- Teacher Education Quarterly.