Michael Norman Johnson III

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Education

University of Iowa **Start August 2024 - Expected May 2027**
PhD Student in Teaching & Learning
Specializing: Mathematics Education

Indiana University **Aug 2023-May 2024**
PhD Student in Curriculum & Instruction
Specializing: Mathematics Education

Indiana University **July 2023**
Master of Arts in Teaching Mathematics

Indiana University **Dec 2021**
Bachelor of Science in Mathematics

Grand Rapids Community College **Dec 2011**
Associates in Arts

Manuscripts Under Preparation

Johnson, M. N., III. "in one ear and out the other" : Critical discourse analysis of metacognitive shifts of a developmental mathematics student. Submitted 2025. [Reviewers Assigned and Under Review]

Proceedings

Farthing, C. , Tanas, J. , **Johnson, M. N., III** (2026). Qualitative analysis of student responses to metacognition prompts in college algebra. *Proceedings of the 28th Annual Conference on Research on Undergraduate Mathematics Education*

Tillema, E., Jeon, M., Duarte Mejia, M., Burch, L. J., Yavuz, S., Rojas Valero, J., **Johnson, M. N., III** (2024). Coordinating practices: In-Service secondary teachers use of 5-practices to support mathematics discussions. *Proceedings of the 46th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*

Schmitz, R., & **Johnson, M. N.** (2013). The impact of spatial ability and preference on performance in single variable integral calculus. In M. Martinez & A. Castro Superfine (Eds.). *Proceedings of the 35th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 513–517). University of Illinois at Chicago.

Awarded Grants

Online Undergraduate Resource Fair for the Advancement and Alliance of Marginalized Mathematicians (OURFA2M2), National Science Foundation Improving Undergraduate STEM Education, **Principal Investigator** with Co-PI's: Vanessa Sun, Lee Trent, Brittany Gelb, and Kiera Edwards
NSF Grant number: DUE 2230388: $49,960 (2022-2023).

Awards

Department of Teaching and Learning Travel Grant **January 2026**

- Competitive grant for PhD students at the University of Iowa in the Department of Teaching Learning. Applicants must have an accepted conference proposal as a presenter listed in the program at a national conference. Must also address the themes in the College of Education Teacher Education Core Principles.

PME-NA Conference Registration Scholarship **August 2024**

- PME-NA has instituted a new scholarship program to cover the cost of conference registration for up to scholarship recipients each year.

Thelma Abell Prize **April 2023**

- This prize was established in 1996 by Philip A. Fox to honor his aunt, who spent her career teaching mathematics in high school. It recognizes undergraduate or graduate students who express an interest in teaching, have high scholastic merit, and demonstrate financial need.

Projects

IU MCCSC Learns Tutoring Program Manager **Aug 2023 – Dec 2023**

- I helped organize a network of 30+ Pre-Service Elementary Ed Students' Early Field Experience across 14 schools, managing the logistical aspects within the Pearl framework. I was the primary point of contact for all technical queries related to Pearl, Swivl and Reflectivity encompassing its teaching exit surveys and attendance modules. I tracked tutor attendance and survey completions, ensuring coherence and quality control. I contributed to the development of the Canvas instructional page, guiding new tutors on tools like UFLI, Pearl, Swivl Capture App, and Reflectivity. I lead the training on video recording software, empowering tutors to introspectively assess their teaching techniques. My role also demanded effective collaboration with key educational leaders, liaising regularly with Principals and Assistant Principals across the school district to ensure the program's success.

Teaching Experience

Upward Bound - TRIO Math Instructor, University of Iowa **Jun 2025 – Current**

- **Secondary Mathematics**
  - Created and taught an engaging Mathematics Course for rising 10^{th} and 11^{th} grade students in the Upward Bound summer program. The course included career exporation in fields related to mathematics utilizing a variety of teaching techniques, including cooperative learning approaches, interactive labs, and computer interactive technologies.

Teaching Assistant (Instructor of Record), University of Iowa **Aug 2024 – Current**

- **Spring 2026 - EDTL:3142 Geometry /text Measurement**
  - This course guides students through the current trends in mathematics education and the process of teaching mathematics through a problem solving and mathematical modeling approach. Students explore how children in grades K-8 think about and learn geometry and measurement. Students will learn and practice research-based pedagogical strategies that help children in elementary school develop mathematical concepts and procedures.
- **Fall 2025 - EDTL:3191 Orientation to Elementary Education**
  - This course introduces the teaching profession, emphasizing the responsibilities and logistics of the Teacher Education Program. Students will explore foundational concepts and develop critical skills necessary for success in their future classrooms. The course also focuses on community building and reflective practices to empower educators to transform their teaching practice. By the end of this course, students will have a deeper knowledge of pedagogical moves to create inclusive, engaging learning environments that celebrate the uniqueness of every learner
- **Spring 2025 - EDTL:3141 Numbers and Operations**
  - Developing prospective elementary educators' problem-solving approach to current trends in math education and process of teaching math; current math content knowledge assessed at start and end of course; opportunities to strengthen number and operations content knowledge; how children in grades K-5 think about and learn math; core ideas of learning, teaching, planning, and assessing number and operations concepts and skills; and research-based pedagogical strategies that help children develop math concepts and procedures.
- **Fall 2024 - MATH:1350 Quantitative Reasoning for Business (Three Sections)**
  - Developing prospective business students understandings of number and quantity,algebra techniques, functions and functional models, exponential and logarithmic functions and models, and a thorough introduction to differential calculus; examples and applications from management, economic sciences, and related areas; for students planning to major in business.

Student Teacher Supervisor, University of Iowa **Jan 2025 – Current**

- **Secondary Mathematics**
  - A representative who is available to Student Teachers for instruction, guidance and support. The College Supervisor is expected to function according to the policies and procedures of the respective school districts and to interact constructively with school personnel. This includes observing Student Teachers in the classroom, working with Cooperating Teachers, and providing feedback to the Student Teachers.

College Teaching Practicum - University of Iowa **Aug 2025 – May 2026**

- **As Part of a Graduate Certificate in College Teaching**
  - MATH 1550: Quantitative Reasoning for Business
    - Attended and assisted in all lectures. Lectured for 130+ student course 3 times. Attended all TA meetings and learned mechanisms of TA management within course structure. Coordinated lessons with other faculty to keep section parity.
  - EDTL: 7071: Critical Discourse Analysis
    - Attended all seminars and prepared discussions. Focus on working with graduate students as students. Worked with students and their analysis process and paper development. Hosted reading groups to facilitate deeper conversations on papers.

Mathematics Tutorial Lab (Tutor), University of Iowa **Aug 2024 – Dec 2024**

- **Mathematics**
  - The Mathematics Tutorial Lab at University of Iowa is an open table, individual support tutoring lab. Students in any undergraduate course listed in Mathematics can use the tutorial lab.

VITAL - Volunteers in Tutoring Adult Learners **Aug 2023 – Aug 2024**

- Monroe County Public Library - Mathematics, Physics, Adult Reading

Associate Instructor (Instructor of Record), Indiana University **Jan 2022 – May 2024**

- **Spring 2024 - EDUC-N101 Teach & Learn Elementary Mathematics (Two Sections)**
  - Developing prospective elementary teachers understandings of number and quantity, including arithmetic operations with whole numbers and fractions.
- **Spring 2023 - Math 116 Introduction to Finite Math**
  - Introduction to sets, counting, basic probability, including random variables and expected values.
- **Fall 2022 - Math 014 Basic Algebra**
  - One semester survey of algebra approximately equivalent to two years of high school algebra.
- **Spring 2022 - Math 106 Mathematics of Decision and Beauty**
  - Exploration of mathematical structure in art, networks, and decision-making. It aims to reveal some of the hidden abstract relationships that animate everyday experiences and activities like perspective drawing, voting systems, decision making, scheduling, and symmetry.

Intern – School of Education, Indiana University **Sep 2023 – Dec 2023**

- EDUC-N101 Teach & Learn Elementary Mathematics

Resident Mathematics Tutor **Jan 2022 – July 2023**

- Center for Veteran and Military Students
- Undergraduate Mathematics and Related Topics

Math Learning Center, Indiana University **Jan – May 2022**

- Mathematics of Decision and Beauty

Private Tutoring **Jun – Aug 2020**

- Finite Mathematics

Summer Bridge Program (Mathematics), Indiana University **Jun – Aug 2015**

- Recitation Leader for J010

Academic Support Center, Grand Rapids Community College **Aug 2010 – Sep 2012**

- Integrated Tutorial Support Facilitator (Recitation)
- Tutor (Small Group, At Risk Group, and Math Lab)

TRiO/Student Support Services, Grand Rapids Community College **Aug 2011 – Jan 2012**

- Created a time slot on weekends that was not served by the Academic Support Center to help other students who were associated with TRiO

Conference Presentations

- **Johnson, M. N., III***Understanding re-learning mathematics from analyzing constructivist-based cognitive theories.*[Oral Presentation]. Annual Meeting AERA, Los Angeles, California. April 8-12
- Farthing, C. , Tanas, J. , **Johnson, M. N., III** *Qualitative analysis of student responses to metacognition prompts in college algebra.* [Oral Presentation]. RUME 28 2026, Alexandria, Virginia. February 25- March 1
- Tillema, E., Jeon, M., Duarte Mejia, M., Burch, L. J., Yavuz, S., Rojas Valero, J., **Johnson, M. N.***Coordinating practices: In-Service secondary teachers use of 5-practices to support mathematics discussions.*[Oral Presentation]. PMENA 46 2024, Cleveland, Ohio. November 7-10
- Jeon, M., Tillema, E., **Johnson, M. N.**, Rojas Valero, J., Duarte Mejia, M., Yavuz, S. Burch, L. J. *Promoting student generalizing through the practices of selecting, sequencing, and connecting student work.*[Interactive Workshop]. NCTM 2024, Chicago, IL. September 25-27
- **Johnson, M. N., III** *Re-Constructivism* [Oral Presentation]. Work in Progress, Indiana Mathematics Education Research Symposium 2024, Indianapolis, IN. March 1st
- **Johnson, M. N., III** *Self-Perception And Agency in Developmental Mathematics* [Oral Presentation]. Work Under Design, Indiana Mathematics Education Research Symposium 2024, Indianapolis, IN. March 1st
- Yavuz, S., Rojas Valero, J., **Johnson, M. N., III**, Jeon, M., Duarte, M., Tillema, E. *Examining In-Service Mathematics Teachers' Integration of the Five Practices in Their Lesson* [Oral Presentation]. Indiana Mathematics Education Research Symposium 2024, Indianapolis, IN. March 1st
- Jeon, M., Rojas Valero, J., **Johnson, M. N., III**, Yavuz, S., Tillema, E. *What Students' Work Do Teachers Use for Classroom Discussions?* [Oral Presentation]. Indiana Mathematics Education Research Symposium 2024, Indianapolis, IN. March 1st
- **Johnson, M. N., III**, Seaton, L., Li, B. *The Impact and Outcomes of OURFA^{2}M^2 2022* [Oral Presentation]. NSF Session on Outcomes and Innovations from NSF Undergraduate Education Programs in Mathematical Sciences, Joint Mathematics Meeting 2023, Boston, MA. January 7th (Invited Talk)
- **Johnson, M. N., III** *Stick index of n-component Brunnian links* [Oral presentation]. 47th Annual New York State Regional Graduate Mathematics Conference, Hosted In Person by Syracuse University, April 2nd 2022
- **Johnson, M. N., III***Stick index of n-component Brunnian links* [Oral presentation]. 19th Annual Pikes Peak Regional Undergraduate Mathematics Conference 2022, Hosted Virtually by Colorado College, February 26th
- **Johnson, M. N., III**, Ahmed, A., Beserra, E., Bhatt, A., Campisi, M., Cazet, N., Gordon, J. E., Torres, L., Vinnakota, S. *Stick index of n-component Brunnian links* [Oral presentation]. AMS Special Session on Polymath Jr, Joint Mathematics Meeting 2022, Seattle, WA. January 5-8. (Invited Talk, Session Cancelled Due to Covid)
- **Johnson, M. N., III**, *Exploring and Supporting Equitable Policies From the Campus to the Classroom* [Oral Presentation]. SEISMIC Scholars Showcase, Hosted Virtually by The SEISMIC Collaboration, August 2021

Conference Organization

OURFA^{2}M^2 **Jun 2021 – August 2023**

- I was an organizer for the Online Undergraduate Resources Fair for the Advancement and Alliance of Marginalized Mathematicians.The goals of the conference are to (1) inform students about resources and opportunities that will help them develop their research careers, (2) represent and uplift marginalized mathematicians who will be role models for conference participants, and (3) provide access to networking opportunities. I have helped organize the 2021 and 2022 iteration. I was the Chair of the Business Committee for the 2022 conference and Principal Investigator on the grant funding.

Workshop Organization/Presentation

Promoting Student Generalizing through the Practices of Selecting, Sequencing, and Connecting Student Work **Sep 2024**

- Have participants to consider how the practices of selecting, sequencing, and connecting can support student generalizing at the secondary level. Once participants have engaged in these practices, we will share classroom video to illustrate findings about how teachers used these practices themselves. Findings include teachers more easily used the selecting and connecting practices than the sequencing practice, and teachers most frequently used these practices to support finding structural similarities and comparing cases, two actions that support generalizing.

Applying to an R.E.U. Workshop **Jan 2023**

- It is concurrent with the OURFA^{2}M^2 mission to prepare undergraduates for all aspects of academia. So we have prepared a workshop where we talk about Eligibility, How to Find REU's, Programs for International Students, Materials needed to apply, Personal Fit for Programs, Advice for Applying, Participating in Programs, and a little inspiration. I also moderated the Q & A session at the end.

MAA Virtual Progamming
Developing Your Career as an Undergrad Math Major:
Advice from the Organizers of OURFA2M2 **October 2022**

- Undergraduate participants learned about how to start a mathematics-oriented career and have access to networking opportunities.

How to Attend a Conference as an Undergraduate **May 2022**

- It is concurrent with the OURFA^{2}M^2 mission to prepare undergraduates for all aspects of academia. So we have prepared a workshop where we will discuss finding conferences of interest, funding to travel to conferences, registering for a conference, preparing to present at a conference, and how to make the most of your experience at a conference.

Local Symposia

Indiana University, School of Education, Department of Curriculum and Instruction **Apr 2024**

- Graduate Research Symposium 2024
  - Empowering re-learning: student voices on developmental mathematics [Early Stage Research]
  - Cognitive equilibria and mathematical reawakening: Perspectives on knowledge retention and reactivation [Work in Progress]

Research Experience

GAMMA-CAT **Jun 2023 – Nov 2024**

- Within the "Generalization Across Multiple Mathematical Areas: Classrooms and Teaching (GAMMA-CAT)" initiative, I explored mathematical generalization in classroom contexts focusing on combinatorics. Notably, I employed the MAXQDA software for deductive coding, analyzing a teacher's adoption of Margaret Smith and Miriam G. Sherin's "5 Practices" for combinatoric problem generalization. Additionally, I helped with a coding scheme based on the RFE Framework by Ellis, Waswa, Tasova, Hamilton, Moore, and Çelik, aiming to pinpoint a teacher's supportive actions for mathematical generalization.

Polymath Jr. REU **Jun – Aug 2021**

- I studied under Dr. Marion Campisi (San Jose State University) on the Minimal Stick Index of Brunnian Links Within The Cubic Lattice. As a part of this project I presented on two of the seminal papers in this field, worked remotely in a group with other students from around the world, helped build upper bound conformations, and worked on lower bound proofs through case work. Through this project I have also become proficient with $LaTeX$ and presenting with the Beamer Template

SEISMIC Scholar at The SEISMIC Collaboration **Jun – Aug 2021**

- The Sloan Equity and Inclusion in STEM Introductory Courses Collaboration (SEISMIC) is a collection of educators, researchers, students, student support staff, and more who work in higher education and have seen the persistent problem of inequity and non-inclusion in STEM education. As a SEISMIC scholar I participated in weekly professional development seminars and did a literature review on equity in grading, explored equitable university policies, catalogued placement exam policies, and and created one-pagers to be distributed to instructors with recommendations for more equitable grading policies. The position was encapsulated with a poster presentation on "Exploring and Supporting Equitable Policies From the Classroom to the Campus."

Research Assistant, Indiana University **Jan – Aug 2021**

- I worked with Dr. Julia Plavnik on understanding and working with the Braid Group Representations as given by Imre Tuba and Hans Wenzl. I also worked with Dr. Colleen Delaney on the corresponding computational elements and how braids through Markov Closure can represent particle movement in 2 spatial dimensions and time.

Directed Reading Program, Indiana University **Jan – May 2021**

- Independent study that was guided by a graduate student (Sean Sanford) throughout the semester with the goal of presenting on a topic that was not covered in detail within the typical math curriculum. I studied Group Theory, Abstract Algebra, and Linear Algebra throughout the semester using "Algebra, Abstract and Concrete" by Frederick M. Goodman as the main text. I presented on "The Fundamental Theorem on Homomorphisms and the Braid Group B_3", Ultimately showing the result that the quotient of the infinite B_3 and it's infinite kernel (The Pure Braids), results in a group that is isomorphic to the finite S_3

Directed Reading Program, Indiana University **Sep – Dec 2020**

- Independent study that was guided by a graduate student (Sean Sanford) throughout the semester with the goal of presenting on a topic that was not covered in detail within the typical math curriculum. I studied Group Theory, Abstract Algebra, and Linear Algebra through out the semester using "Algebra, Abstract and Concrete" by Frederick M. Goodman as the main text. I presented on Lagrange's Theorem Through Examples and a Counter Example of the Converse.

Summer Undergraduate Research Fellowship, Michigan Tech **Jun – Sep 2013**

- My main area of study was mathematical pedagogy. I was interested in using the jigsaw methodology in cooperative learning theory. I learned how to set up an experiment to test a hypothesis in the social sciences and had a small presentation on my initial findings.

Undergraduate Research Assistant, Michigan Tech **Aug 2012 – Sep 2013**

- I was an undergraduate research assistant for Dr. Rebecca Schmitz in the study of second semester calculus student's preference and performance for graphical and analytical reasoning.

The Transfer Scholars Research Program, Michigan Tech **Aug 2012 – Jan 2013**

- I was a part of an outreach program that took transfer students from Michigan community colleges and helped ease the transition while teaching new research related skills. Attended seminars on reading and critiquing research papers and professional development.

Professional Service

NCTM Reviewer - Research Proposals **2024**

PMENA Reviewer - Research Proposals **2024**

Conference Attendance

Annual Meeting of the American Education Research Association **April 8-12 2026**

Research on Undergraduate Mathematics Education **February 25- March 1 2025**

6th Annual OURFA^{2}M^2 **February 7-8 2026**

5th Annual OURFA^{2}M^2 **February 8-9 2025**

Psychology of Mathematics Education - North America, Research Conference **Nov 7-10 2024**

National Council of Teachers of Mathematics 2024 Research Conference **Sep 25-27 2024**

4th Annual OURFA^{2}M^2 **Nov 18-19 2023**

Joint Mathematics Meeting 2023 **Jan 4-7 2023**

3rd Annual OURFA^{2}M^2 **Nov 19-20 2022**

Indiana Week of SEISMIC, SEISMIC **Oct 18-20 2022**

2022 Summer Meeting, SEISMIC **Jun 13-17 2022**

47th Annual New York State Regional Graduate Mathematics Conference **April 2 2022**

19th Annual Pikes Peak Regional Undergraduate Mathematics Conference **Feb 26 2022**

2nd Annual OURFA^{2}M^2 **Dec 5-6 2021**

2021 Summer Meeting, SEISMIC **Jun 15-17 2021**

Indiana University's 3^{rd} Annual Learning Analytics Summit **May 12-14 2021**

Joint Mathematics Meetings 2021 **Jan 6-9 2021**

Inaugural OURFA^{2}M^2 **Dec 19 2020**

Workshop Attendance

Inclusive Active Learning in Undergraduate Mathematics
Nancy Kress (University of Colorado), Rebecca Machen (University of Colorado),
Wendy Smith (University of Nebraska), and Math Voigt (Clemson University) **January 5-7 2023**

- This Professional Enhancement Program supported participants to advance their use of active learning instructional practices with explicit attention to approaches that support inclusive learning communities. Promotion of positive experiences for all students, especially those who identify as members of underrepresented groups in mathematics, was be central throughout this PEP. This PEP addressed early undergraduate mathematics course structures, policies, instructional practices and methods of assessment with emphasis aligned to the needs and interests of the participants.

Breaking the Cycle of Mechanisms of Inequality in Mathematics Teaching and Learning
Nicole M. Joseph (Vanderbilt University) and William Yslas Velez (University of Arizona) **January 4-5 2023**

- This Professional Enhancement Program aimed to co-construct with its audience members a powerful and meaningful learning experience for breaking down issues and disrupting the cycle of inequality in the mathematics community. Participants engage in short readings, small group discussion, scenario/video analyses, and their tangible product is an implementation plan for change within their own realms of influence.

A LASER Focus on Understanding and Improving STEM Education **Aug 11 2021**

- I was introduced to open-access curriculum materials developed as part of the Learning Analytics in STEM Education Research (LASER) Institute to gain hands-on experience with computational analysis techniques (e.g. network analysis, text mining, machine learning) using R and RStudio.

SEISMIC Scholars R Workshop **Jun 24 2021**

- This workshop includes an introduction to R and R studio as tools for statistical analysis and an integrated development environment respectively. This included methodology on data wrangling, summarizing data in a meaningful way, and plotting data for analysis.

Professional Membership

National Council of Teachers of Mathematics **Jul 2024 – Present**

American Educational Research Association **Sep 2023 – Present**

Mathematical Association of America **Jan 2021 – Present**

American Mathematical Society **Jan 2021 – 2024**

Certifications

State of Iowa Teaching License

- Mathematics for Grades 5-12
- Exp: 6/30/2027

Indiana State Professional Educator's License

- Mathematics for Grades 5-12
- In process of renewal

CITI Program

- Human Research: Social/Behavioral Researchers (Stage 1)
- Physical Science Responsible Conduct of Research

Extra-Curricular

Campaign to Organize Graduate Students (UE Local 896) – Union Steward **Jan 2026 – Current**

Prison Mathematics Project – Mentor & Curriculum Volunteer **Oct 2023 – Current**

Indiana University Graduate and Professional Student Government **Sep 2022 – Aug 2024**

- Representative of School of Education 2023
  - Serving on Diversity Committee
- Representative of Mathematics - 2022

Mathematics Graduate Reading Group **Aug 2022 – May 2024**

- Philosophy of Mathematical Practice 2023
- Mathematics Education - 2022

Guinness World Record: World's Largest Snowball – Team Member **Mar 2013 – Current**

Annual Hilly 100 – Cycling Weekend **2022,2023**

Indy Tri – Sprint Triathlon in 1:30's **Jul 2022,2023**

OneAmerica 500 Festival Mini-Marathon: Top 16%,10%,18% Overall	**May 2022,2023,2024**
Hoosier Half-Marathon: 13^{th}, 11^{th}, 12^{th} in Age Group	**Apr 2022,2023,2024**
Hoosiers Outrun Cancer 5k: 8^{th} in Age Group	**Sep 2021**
Member, Math Club, Indiana University	**Aug 2020 – May 2021**
Member, Chess Club, Indiana University	**Aug 2020 – May 2021**
NaNoWriMo Finisher	**November 2019**