# Michael Norman Johnson III

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## Education

**Indiana University** **Started August 2023**
*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*

## Publication

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

**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

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

- Monroe County Public Library - Mathematics, Physics

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

- EDUC-N101 Teach & Learn Elementary Mathematics

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

- Spring 2024 - EDUC-N101 Teach & Learn Elementary Mathematics (Two Sections)
- Spring 2023 - Math 116 Introduction to Finite Math
- Fall 2022 - Math 014 Basic Algebra
- Spring 2022 - Math 106 Mathematics of Decision and Beauty

**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 Beautry

**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 *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 – Auguest 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

**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.

**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.

**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.

## Research Experience

**GAMMA-CAT** **Jun 2023 – Current**

- 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.

## Conference Attendance

**2023 OURFA$^2$M$^2$** **Nov 18-19 2023**

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

**2022 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**

**2021 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

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

**American Mathematical Society** — **Jan 2021 – Present**

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

## Other Work Experience

**Purchasing Manager – Lake of the Woods Camp – Decatur, MI** — **Summer 2020**

**Head Chef – College Fresh – (AEPI) – Bloomington,IN** — **Aug 2019 – May 2020**

**Kitchen Manager – Birch Trail Camp – Minong,WI** — **Summer 2019**

**Private Chef – College Chefs – Delta Gamma – Bloomington,IN** — **Aug 2018 – May 2019**

**Kitchen Manager – Grazie! Italiano – Bloomington,IN** — **May 2016 – Aug 2018**

## Certifications

**Indiana State Professional Educator's License**

- Mathematics for Grades 5-12

**CITI Program**

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

## Extra-Curricular

**Prison Mathematics Project – Mentor** **Oct 2023 – Current**

**Indiana University Graduate and Professional Student Government** **Sep 2022 – Current**

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

**Mathematics Graduate Reading Group** **Aug 2022 – Current**

- 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 $16\%$,$10\%$ Overall** **May 2022,2023**

**Hoosier Half-Marathon: $13^{th}$ and $11^{th}$ in Age Group** **Apr 2022,2023**

**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**