

DR. ABHIK ROY



EDUCATION

2016

Western Michigan University
Ph.D. in Program Evaluation

Kalamazoo, MI

Dissertation. Building an Evaluation Model of Academic Advising's Impact on Progression, Persistence, and Retention Within University Settings

2007

Michigan Technological University
M.S. in Mathematics

Houghton, MI

Thesis. Quotient Rings of the Eisenstein Integers

2001

West Virginia Wesleyan College
B.S. in Mathematics

Buckhannon, WV

Terminal Study. 4-Cell Embedding on a n -genus Torus



PROFESSIONAL EXPERIENCE

2023
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2016

Assistant Professor
West Virginia University

Morgantown, WV

- Contributed to peer-reviewed publications by authoring and submitting scholarly papers.
- Conducted rigorous evaluations of a variety of programs, projects, and grants, contributing to their optimization and effectiveness.
- Designed and implemented dynamic and interactive surveys using HTML, CSS, and JavaScript in the Qualtrics platform.
- Extracted, wrangled, and cleaned data from various remote sources; developed

a range of visualizations from static to interactive for report embedding or dissemination, and built web apps in Shiny all within R/RStudio.

- Instructed classes in evaluation, measurement, and research methods, emphasizing the application of data science techniques.
- Mentored Masters and Doctoral students, guiding their academic pursuits and research activities.

2016
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2014

Data Analyst
University of Kansas

Lawrence, KS

- Authored detailed evaluation reports, catering to the requirements of diverse stakeholders.
- Conducted research and deployed predictive statistical models aimed at enhancing student retention and graduation efforts.
- Developed web applications using Shiny and Tableau, facilitating extraction,

summarization, and visualization of data from the organization's Oracle database.

- Spearheaded and delivered presentations on findings from comprehensive qualitative, quantitative, and mixed-methods studies, both large and small.



WWW

CONTACT INFORMATION

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0000-0002-7085-8964

EXPERTISE

Content, cluster, and social network analysis

Data visualization

Designing and administering small- and large-scale surveys

Modeling and analysis using statistics and machine learning

Planning and conducting program evaluations

Programming and analysis in R with markup using $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$

Quantitative, qualitative, and mixed method designs and analyses

Web app development and static/dynamic reporting using





SELECT PUBLICATIONS

- 2023 ● Is it accessible? Preservice teachers' access to computational thinking.
Contemporary Issues in Technology and Teacher Education
Kale U., Kookan, A., Yuan, J., & **Roy, A.** (accepted)
- 2023 ● Program Evaluation Standards for Utility Facilitate Stakeholder Internalization of Evaluative Thinking in the West Virginia Clinical Translational Science Institute
Journal of Multidisciplinary Evaluation
Curtis, R., **Roy, A.**, Lewis, N., Dooty, E. N., & Mikalik, T. https://journals.sfu.ca/jmde/index.php/jmde_1/article/view/831
- 2022 ● Thinking Processes in Code.org: A Relational Analysis Approach to Computational Thinking Computer Science Education
Computer Science Education
Kale, U., Yuan, J., & **Roy, A.** <https://doi.org/10.1080/08993408.2022.2145549>
- 2021 ● There's So Much to Do and Not Enough Time to Do It! A Case for Sentiment Analysis to Derive Meaning From Open Text Using Student Reflections of Engineering Activities.
American Journal of Evaluation, 42 (4), 559–576.
Roy, A., & Rambo-Hernandez, K.E. <https://doi.org/10.1177/1098214020962576>
- 2020 ● To design or to integrate? Instructional design versus technology integration in developing learning interventions.
Education Tech Research Dev 68, 2473–2504.
Kale, U., **Roy, A.** & Yuan, J. <https://doi.org/10.1007/s11423-020-09771-8>
- 2020 ● Using Interactive Theater to Promote Inclusive Behaviors in Teams for First-year Engineering Students: A Sustainable Approach.
Development of A Holistic Cross-Disciplinary Project Course Experience as a Research Platform for the Professional Formation of Engineers.
Dey, K.C., & Rahman, M.T., & Pyrialakou, V.D., & Martinelli, D., & Rambo-Hernandez, K.E., & Fraustino, J.D., & Deskins, J., & Plein, L.C., & **Roy, A.R.** <https://peer.asee.org/29592>
- 2018 ● General chemistry student attitudes and success with use of online homework: Traditional-Responsive versus Adaptive-Responsive.
Journal of Chemical Education, 95 (5), 691-699.
Richard-Babb, M., Curtis, R., Ratcliff, B., **Roy, A.R.**, & Mikalik, T. <https://doi.org/10.1021/acs.jchemed.7b00829>
- 2018 ● To go virtual or not to go virtual, that is the question: A comparative study of face-to-face versus virtual laboratories in a physical science course.
Journal of College Science Teaching, 48 (2), 59-67.
Miller, T.A., Carver, J.S., & **Roy, A.R.** <https://www.jstor.org/stable/26616271>
- 2014 ● Reasoning-and-proving in algebra: The case of two reform-oriented U.S. textbooks.
International Journal of Educational Research 64., 92-106
Davis, J.D., Smith, D.O., **Roy, A.R.**, & Bilgic, Y. K. <https://doi.org/10.1016/j.ijer.2013.06.012>
- 2012 ● What's in a Scriven number?
Journal of MultiDisciplinary Evaluation, 8 (19), 41-45.
Roy, A.R., Hobson, K.A., & Coryn, C.L.S. <https://doi.org/10.56645/jmde.v8i19.372>



BOOK CHAPTERS

2014

- Social network analysis: Finding meaning in connections.
Nova Science Publishers, Inc.
Roy, A.R. 978-1-53612-734-8



INVITED CONTRIBUTIONS

2012

- What is a Scriven number?
The American Evaluation Association Newsletter
Roy, A.R., Hobson, K.A., & Coryn, C.L.S.



ACTIVE GRANTS

Current
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2023

- Healthy Start Initiative
West Virginia University Research Corporation 📍 Morgantown, WV
 - *Lead Program Evaluator & Methodologist*
 - Building valid and reliable survey instruments to assess participant experiences.
 - Implementing process, monitoring, and impact evaluations of programmatic activities.
 - Utilizing mixed methods designs to study participant data.
 - Total Award: \$5,470,000
 - [HRSA-19-049](#)

Current
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2022

- Teaching Science with Computational Thinking: Preparing Preservice Elementary Educators of the Future STEM Workforce
West Virginia University 📍 Morgantown, WV
 - *Lead Program Evaluator & Mixed Methods Analyst*
 - Applying mixed methods text analysis of written and interview data using thematic analysis and various machine learning methods.
 - Constructing and validating survey instruments used to assess progress and programmatic impact.
 - Implementing process and impact evaluations of program activities.
 - Total Award: \$294,958.00
 - [2019-NSF 2142274](#)



INACTIVE GRANTS

2022
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2017

- WVCTSI: West Virginia Clinical and Translational Science Institute
West Virginia University 📍 Morgantown, WV
 - *Program Evaluator & Data Scientist*
 - Analyzed large data sets using frequentist and Bayesian methods.
 - Conducted local and multi-site multi-cluster evaluation studies.
 - Developed/validated items and distributing customized Qualtrics surveys built with CSS and Javascript.
 - Mentored future graduate social data scientists.
 - Pulled, wrangled, and visualized secondary data
 - Total Award: \$20,000,000
 - [2017-NIH 2U54GM104942-02](#)

- 2020
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2021
- Appalachian Gerontology Experiences - Advancing Diversity in Aging Research
West Virginia University 📍 Morgantown, WV
 - *Lead Program Evaluator*
 - Developed and distributing customized Qualtrics surveys built with CSS and Javascript.
 - Performed various evaluative studies addressing program efficacy and engagement.
 - Total Award: \$678,000 -[2020-NIH 1R25AG059558-01A1](#)
- 2020
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2022
- Research Initiative: A Holistic Cross-Disciplinary Project Experience as a Platform to Advance the Professional Formation of Engineers
West Virginia University 📍 Morgantown, WV
 - *Methodological Advisor & Research Specialist*
 - Mentored engineering faculty and graduate students on the implementation of research methods.
 - Conducted quantitative and qualitative studies on undergraduate student experiences within grant related programs.
 - Total Award: \$200,000
 - [2019-NSF 1927232](#)
- 2018
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2017
- Stepping UP with Avenue: Progress Monitoring: A Software Suite Helping Teachers Improve Literacy Progress For Deaf/Hard Of Hearing Students
Pennsylvania State University 📍 State College, PA
 - *Lead Program Evaluator*
 - Administered product and program evaluations of existing tools and activities.
 - Total Award: \$2,470,440
 - [2017-ED H327S170012](#)
- 2018
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2017
- Cultivating Inclusive Identities of Engineers and Computer Scientists: Expanding Efforts to Infuse Inclusive Excellence in Undergraduate Curricula
West Virginia University 📍 Morgantown, WV
 - *Lead Program Evaluator*
 - Conducted personnel and program evaluations of existing members and interventions.
 - Created and implemented various text analysis methods.
 - Total Award: \$2,000,000
 - [2017-NSF 1725880](#)
- 2020
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2017
- GAUSSI: Generating, Analyzing, and Understanding Sensory and Sequencing Information: A Trans-Disciplinary Graduate Training Program in Biosensing and Computational Biology
Colorado State University 📍 Fort Collins, CO
 - *Lead Program Evaluator*
 - Conducted unstructured and semi-structured interviews and focus groups assessing participant experiences.
 - Implemented mixed methods evaluations to study program impacts on students and faculty.
 - Total Award: \$3,013,779
 - [2017-NSF 1450032](#)



PRESENTATIONS

- 2022
- Let's Get Sentimental: Machine Learning Aided Data Analysis for Large Qualitative Data Sets
American Evaluation Association Annual Conference 📍 New Orleans, LA
Seidel, T. , Ferguson, C.F., & **Roy, A.R.**

- 2022 ● Best of Both Worlds: Affordances of Mixing Machine Learning and Qualitative Content Analysis
American Educational Research Association Annual Meeting 📍 San Diego, CA
Roy, A.R., Ferguson, C.F., Curtis, R., & Babb-Richards, M.
- 2020 ● These Aren't Random Words Just Strung Together?: Using Machine Learning and Pretty Visualizations to Discover Topics in Articles.
American Evaluation Association Annual Conference 📍 virtual
Roy, A.R.
- 2019 ● Little Fish in a Big Pond, Only Fish in a Little Pond: How Roles Shape our Identities as Evaluators.
American Evaluation Association Annual Conference 📍 Minneapolis, MN
M, Loomis, D.L., Mikalik, T.L., Curtis, R., **Roy, A.R.**, & Bernstein, M.
- 2019 ● Evolving Program Logic Models to Meet Shifting Program Needs: The Case of WV Clinical Translational Science Institute.
American Evaluation Association Annual Conference 📍 Minneapolis, MN
Curtis, R., **Roy, A.R.**, Bernstein, M, Loomis, D.L., & Mikalik, T.L.
- 2019 ● The Value of External Evaluators When Building Clinical Translational Research Infrastructure.
American Evaluation Association Annual Conference 📍 Minneapolis, MN
Curtis, R., **Roy, A.R.**, Bernstein, M, Loomis, D.L., & Mikalik, T.L.
- 2019 ● Using Associated Networks to Evaluate Content within Courses.
American Evaluation Association Annual Conference 📍 Minneapolis, MN
Roy, A.R., Kale, U, & Yuan, J.
- 2019 ● Why Is It That Writers Write but Fingers Don't Fing? Using Machine Learning and Lexemes to Make Sense of Nonsense.
American Evaluation Association Annual Conference 📍 Minneapolis, MN
Roy, A.R., Curtis, R., Mikalik, T.L., Loomis, D.L., & Bernstein, M.
- 2019 ● Discovering the Underlying Meaning Behind Get Me Off Your F***ing Mailing List? and Most Other Narratives.
American Evaluation Association Annual Conference 📍 Minneapolis, MN
Roy, A.R., Curtis, R., Mikalik, T.L., Loomis, D.L., & Bernstein, M.
- 2019 ● Assessing for Improvement: The Use of Artificial Intelligence to Uncover Potential Differential Impact of Assignments.
American Evaluation Association Annual Conference 📍 Toronto, CN
Roy, A.R. & Rambo-Hernandez, K.
- 2018 ● That's a Pretty Picture of Dots and Lines but What Does it Mean?: A Q&A Session with the Social Network Analysis TIG Leaders.
American Evaluation Association Annual Conference 📍 Cleveland, OH
Roy, A.R., Durland, M.M., Woodland, R., & Phillips, G.
- 2018 ● Navigating Buy-in and Shifting Evaluation Needs Over Time in NIH Clinical Translational Research Award.
American Evaluation Association Annual Conference 📍 Cleveland, OH
Curtis, R., & **Roy, A.R.**, Mikalik, T.L.
- 2018 ● Using a Mixed Methods Evaluation to Discover How an Interactive Theater Based Model Stimulates Inclusive Behaviors in Engineering.
American Evaluation Association Annual Conference 📍 Cleveland, OH
Roy, A.R., Rambo-Hernandez, K., Hensel, R.A., & Morris, M.L.

- 2018 ● Collaboration Evaluation: Using Social Network Analysis to Reveal an Active Undiscovered Network.
American Evaluation Association Annual Conference
Roy, A.R., Curtis, R., & Mikalik, T.L. 📍 Cleveland, OH
- 2018 ● Examining the Past and Looking Forward: The Future of Evaluation Theory and Use.
American Evaluation Association Annual Conference
Roy, A.R. & Hobson, K.A. 📍 Cleveland, OH
- 2017 ● Transforming Graduate STEM Education: A Theory-Driven Evaluation of the GAUSSI National Science Foundation Research Training (NRT) Program.
American Evaluation Association Annual Conference
Roy, A.R., Hernandez, P.A., Chen, T., & Paguyo, C. 📍 Washington, DC
- 2017 ● Program Evaluation for Everyone! - Constructing an Online Foundational Course for Capacity Building using Theorists as a Focus.
American Evaluation Association Annual Conference
Roy, A.R. & Curtis, R.P. 📍 Washington, DC
- 2017 ● Three Stages Down! Exploring the Criteria for the Next Generation of Evaluation Theorists through Social Network Analysis.
Hawaii-Pacific Evaluation Association Annual Conference
Roy, A.R. & Hobson, K.A. 📍 Kane'ohe, HI
- 2017 ● Content in the Background: Using Evaluation Theorists as the Principal Motivator for Foundational Evaluation Courses.
Hawaii-Pacific Evaluation Association Annual Conference
Roy, A.R. & Curtis, R.P. 📍 Kane'ohe, HI
- 2015 ● Survey Says! Students Getting Tired of Surveys.
National Academic Advising Association Annual Conference
Roy, A.R. & Goetz, H.L. 📍 Las Vegas, NV
- 2013 ● Influences of Hierarchical Linear Modeling in Evaluation.
Aotearoa New Zealand Evaluation Association Annual Conference
Roy, A.R. & Goetz, H.L. 📍 Auckland, NZ
- 2012 ● Survey sample methods: Evaluators' toolbox refreshment.
American Evaluation Association Annual Conference
Roy, A.R. & Hobson, K.A. 📍 Minneapolis, MN



TEACHING EXPERIENCE IN EVALUATION AND METHODOLOGY (2016 -)

- 2020
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2018 ● Data Visualization
West Virginia University
2020, 2018 📍 Morgantown, WV
- 2017 ● Educational Psychology
West Virginia University
2017 📍 Morgantown, WV
- 2016 ● Educational Research
West Virginia University 📍 Morgantown, WV

2022 2016	● Introduction to Research West Virginia University 2022, 2018, 2017, 2016	📍 Morgantown, WV
2020 2018	● Measurement/Evaluation in Educational Psychology West Virginia University 2022, 2020, 2018	📍 Morgantown, WV
2019 2017	● Mixing Research Methodologies West Virginia University 2022, 2019, 2018, 2017	📍 Morgantown, WV
2022 2017	● Program Evaluation West Virginia University 2022, 2021, 2020, 2019, 2018, 2017	📍 Morgantown, WV
2021 2017	● Social Network Analysis West Virginia University 2021, 2017	📍 Morgantown, WV
2021 2017	● Statistical Methods 1 West Virginia University 2021, 2020, 2019, 2018, 2017	📍 Morgantown, WV
2020 2022	● Survey Design West Virginia University 2022, 2020	📍 Morgantown, WV



TEACHING EXPERIENCE IN MATHEMATICS (2005 - 2015)

2008	● Business Calculus Central Michigan University	📍 Mount Pleasant, MI
2009	● College Algebra Central Michigan University	📍 Mount Pleasant, MI
2012	● Discrete Mathematics Pittsburgh State University	📍 Pittsburgh, KS
2014	● Elementary Statistics Pittsburgh State University	📍 Pittsburgh, KS
2010 2009	● Foundations of Statistics Pittsburgh State University 2009, 2010	📍 Pittsburgh, KS
2008 2007	● Intermediate Algebra Central Michigan University 2007, 2008	📍 Mount Pleasant, MI
2007	● Integral Calculus Michigan Technological University	📍 Houghton, MI

2015 2014	<ul style="list-style-type: none"> Linear Algebra University of Kansas 2014, 2015 	<ul style="list-style-type: none"> Lawrence, KS
2013	<ul style="list-style-type: none"> Mathematical Thinking Grades 6-12 Western Michigan University 	<ul style="list-style-type: none"> Kalamazoo, MI
2014 2013	<ul style="list-style-type: none"> Mathematics Curriculum Grades 6-12 Western Michigan University 2013, 2014 	<ul style="list-style-type: none"> Kalamazoo, MI
2005	<ul style="list-style-type: none"> Multivariable Calculus Michigan Technological University 	<ul style="list-style-type: none"> Houghton, MI
2007 2006	<ul style="list-style-type: none"> Single Variable Calculus Michigan Technological University 2006, 2007 	<ul style="list-style-type: none"> Houghton, MI

SERVICE

2022 2013	<ul style="list-style-type: none"> Associate Editor <i>Journal of MultiDisciplinary Evaluation</i>
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MEMBERSHIPS

2022 2012	<ul style="list-style-type: none"> American Evaluation Association
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