





DR. ABHIK ROY

EDUCATION


- 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
- Michigan Technological University
M.S. in Mathematics  Houghton, MI
Thesis. Quotient Rings of the Eisenstein Integers
- 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
 - Authored and co-authored 15 peer-reviewed publications, contributing to various fields including program evaluation.
 - Conducted over 20 rigorous evaluations leading to increases in program effectiveness.
 - Designed and deployed interactive surveys using HTML, CSS, and JavaScript on the Qualtrics platform, reaching up to 4,000 respondents.
 - Extracted and cleaned data from multiple remote sources; developed and published 20+ interactive visualizations for public reporting and client dissemination using Rmarkdown and Shiny.
 - Mentored 4 Masters and Doctoral students, guiding them to successful completion of their academic research projects.
 - Taught courses in evaluation, measurement, research methods, and survey design, with a focus on data science techniques, to over 500 students.

2016
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2014

- Data Analyst
University of Kansas  Lawrence, KS
 - Conducted comprehensive studies using qualitative, quantitative, and mixed-methods approaches, and presented findings to senior management, influencing policy changes.
 - Crafted tailored evaluations that met the needs of diverse stakeholders, resulting in actionable insights for multiple non-academic departments.
 - Designed and administered surveys to over 300 university students and staff, achieving response rates ranging from 47% - 91%.
 - Engineered web applications using R and Tableau, streamlining data extraction and visualization processes.
 - Spearheaded research initiatives that increased student retention rates by 3% - 5% through predictive statistical modeling.

CONTACT INFORMATION

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 0000-0002-7085-8964

EXPERTISE

Data visualization

Markup using $LATEX$

Program evaluations from planning to reporting

Quantitative, qualitative, and mixed method studies

 **programming**

Social network analysis

Survey design, administration, and research

Statistical modeling and analysis

Text analytics

Web application development and static/dynamic reporting using



WWW 

SELECT PUBLICATIONS

- 2023 ● Teaching science via computational thinking? Enabling future science teachers' access to computational thinking.
Contemporary Issues in Technology and Teacher Education
Kale U., Kookan, A., Yuan, J., & **Roy, A.** ([doi pending](#))
- 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.



EVALUATIONS



ACTIVE

Current
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2023



Lead Program Evaluator & Methodologist - Healthy Start Initiative (HRSA-19-049 Total Award: \$5,470,000)
West Virginia University Research Corporation

📍 Morgantown, WV

- Conducted process, monitoring, and impact evaluations at the program level.
- Designed and validated survey tools, evaluating the experiences of more than 50 participants.
- Generated two comprehensive internal evaluation documents and prepared an evaluation proposal aimed at federal funding renewal.
- Utilized a mixed-methods design to independently analyze both longitudinal and cross-sectional data, focusing on the smoking cessation efforts of mothers and the experiences of new or distant caretakers/fathers.

Current
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2022



Program Evaluator & Mixed Methods Analyst - Teaching Science with Computational Thinking: Preparing Preservice Elementary Educators of the Future STEM Workforce (2019-NSF 2142274 Total Award: \$294,958.00)
West Virginia University

📍 Morgantown, WV

- Administered process evaluations for all program activities.
- Created and employed a longitudinal mixed-method study to reduce and analyze more than 50 open-ended survey responses and six interview session transcripts, leveraging thematic/content analyses and techniques including HDBSCAN/t-SNE, k-Means, and PCA.
- Designed and validated two survey tools for assessing progress and evaluating programmatic impact.
- Produced one in-depth internal evaluation document and crafted evaluation summaries for federal reporting purposes.



COMPLETED

2022
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2017

Community Program Evaluator & Data Scientist - WVCTSI: West Virginia Clinical and Translational Science Institute ([2017-NIH 2U54GM104942-02](#) Total Award: \$20,000,000)
West Virginia University

📍 Morgantown, WV

- Analyzed large datasets using frequentist and Bayesian methods, influencing the direction and activities of 8 programs.
- Authored quarterly and internal/external annual evaluation reports for dissemination via hard copy and interactive R.
- Conducted local and multi-site multi-cluster evaluation studies, impacting 5 different core units.
- Created numerous data visualizations and 4+ Shiny applications for public and internal outcome data exploration.
- Developed and distributed customized Qualtrics surveys built with CSS and JavaScript, reaching 5,000+ individuals.
- Generated or contributed to nine comprehensive internal evaluation documents in both print and interactive digital formats, and prepared summaries for external stakeholders and federal reporting.
- Mentored 6 future graduate social data scientists, guiding them through successful research projects.

2020
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2021

Program Evaluator - Appalachian Gerontology Experiences - Advancing Diversity in Aging Research ([2020-NIH 1R25AG059558-01A1](#) Total Award: \$678,000)
West Virginia University

📍 Morgantown, WV

- Developed and distributed two customized interactive surveys using Qualtrics, enhanced with CSS and JavaScript, to gather feedback on programmatic activities from a specific group of 24 students.
- Spearheaded three distinct evaluative studies focusing on student efficacy, engagement, and motivation.
- Produced an external evaluation summary for federal reporting.

2020
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2022

Research Methods Advisor & Specialist - Research Initiative: A Holistic Cross-Disciplinary Project Experience as a Platform to Advance the Professional Formation of Engineers ([2019-NSF 1927232](#) Total Award: \$200,000)
West Virginia University

📍 Morgantown, WV

- Conducted longitudinal studies on the experiences of 30 undergraduate students in specialized interdisciplinary courses that integrated social science and engineering, using both surveys and focus group discussions.
- Mentored 10 engineering faculty members and graduate students in the implementation of research methodologies.

2018
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2017

Program Evaluator - Stepping UP with Avenue: Progress Monitoring: A Software Suite Helping Teachers Improve Literacy Progress For Deaf/Hard Of Hearing Students ([2017-ED H327S170012](#) Total Award: \$2,470,440)
Pennsylvania State University

📍 State College, PA

- Administered in-depth evaluations of five tools designed for assessment and engagement of the deaf and hard of hearing.
- Conducted a multi-site, multi-cluster evaluation on a large scale for all programmatic activities.
- Produced a detailed external evaluation brief for federal reporting.

2018
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2017

Lead Program Evaluator - Cultivating Inclusive Identities of Engineers and Computer Scientists: Expanding Efforts to Infuse Inclusive Excellence in Undergraduate Curricula ([2017-NSF 1725880](#) Total Award: \$2,000,000)
West Virginia University

📍 Morgantown, WV

- Administered longitudinal surveys to over 50 participating faculty members to gauge expectations, gather feedback for improvement, and monitor shifts in DEI attitudes and perceptions.
- Applied longitudinal NLP text mining techniques such as concordance, LDA topic modeling, and sentiment analysis to analyze and summarize feedback from over 3,000 first-year engineering students concerning grant-related class activities.
- Contributed to the creation of more than 10 journal publications and academic conference presentation materials.
- Developed more than 150 static and interactive data visualizations for stakeholder exploration, both internal and external reporting, as well as for presentations and publications.
- Evaluated all four principal investigators through personnel assessments.
- Produced two in-depth internal evaluation documents and crafted summaries for external stakeholders and federal reporting purposes.

2020
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2017

Program Evaluator - GAUSSI: Generating, Analyzing, and Understanding Sensory and Sequencing Information: A Trans-Disciplinary Graduate Training Program in Biosensing and Computational Biology (2017-NSF 1450032 Total Award: \$3,013,779)

Colorado State University

📍 Fort Collins, CO

- Administered 32 interviews and focus groups, both cross-sectional and longitudinal, using unstructured and semi-structured formats to gauge the experiences of students and faculty.
- Carried out process evaluations for four grant-associated programs, leading to enhanced member tracking, increased program efficiency, and heightened participant satisfaction.
- Constructed and validated tools to measure students' ability to convey research findings to a lay audience.
- Designed semi-annual adaptive and interactive Qualtrics surveys enhanced with HTML/CSS/JavaScript, securing feedback from over 100 students and faculty with a 95% response rate.
- Developed predictive models targeting the improvement of student engagement, experience, and retention.
- Generated data visualizations for assessment and longitudinal studies, bolstering inferential statistical analyses to identify trends and support programmatic enhancements, retention strategies, and satisfaction initiatives.
- Produced nine in-depth internal evaluation documents and crafted summaries for external stakeholders and federal reporting purposes.



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

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 ● Iscovering 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 NIG 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 📍 Cleveland, OH
Roy, A.R., Curtis, R., & Mikalik, T.L.
- 2018 ● Examining the past and looking forward: The future of evaluation theory and use.
American Evaluation Association Annual Conference 📍 Cleveland, OH
Roy, A.R. & Hobson, K.A.
- 2017 ● Transforming graduate STEM Education: A theory-driven evaluation of the GAUSSI National Science Foundation Research Training (NRT) Program.
American Evaluation Association Annual Conference 📍 Washington, DC
Roy, A.R., Hernandez, P.A., Chen, T., & Paguyo, C.
- 2017 ● Program evaluation for everyone! - Constructing an online foundational course for capacity building using theorists as a focus.
American Evaluation Association Annual Conference 📍 Washington, DC
Roy, A.R. & Curtis, R.P.

- 2017 • Three stages down! Exploring the criteria for the next generation of evaluation theorists through social network analysis.
Hawaii-Pacific Evaluation Association Annual Conference 📍 Kane'ohe, HI
Roy, A.R. & Hobson, K.A.
- 2017 • Content in the background: Using evaluation theorists as the principal motivator for foundational evaluation courses.
Hawaii-Pacific Evaluation Association Annual Conference 📍 Kane'ohe, HI
Roy, A.R. & Curtis, R.P.
- 2015 • Survey says! Students getting tired of surveys.
National Academic Advising Association Annual Conference 📍 Las Vegas, NV
Roy, A.R. & Goetz, H.L.
- 2013 • Influences of Hierarchical Linear Modeling in evaluation.
Aotearoa New Zealand Evaluation Association Annual Conference 📍 Auckland, NZ
Hobson, K.A., **Roy, A.R.** & Coryn, C.L.S.
- 2012 • Survey sample methods: Evaluators' toolbox refreshment.
American Evaluation Association Annual Conference 📍 Minneapolis, MN
Hobson, K.A., **Roy, A.R.** & Coryn, C.L.S.



TEACHING EXPERIENCE



EVALUATION, MEASUREMENT, AND RESEARCH METHODS (2016 - 2023)

- 2020
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2018 • *Data Visualization*
West Virginia University 📍 Morgantown, WV
2020, 2018
- 2017 • *Educational Psychology*
West Virginia University 📍 Morgantown, WV
- 2016 • *Educational Research*
West Virginia University 📍 Morgantown, WV
- 2022
|
2016 • *Introduction to Research*
West Virginia University 📍 Morgantown, WV
2022, 2018, 2017, 2016
- 2020
|
2018 • *Measurement/Evaluation in Educational Psychology*
West Virginia University 📍 Morgantown, WV
2022, 2020, 2018
- 2019
|
2017 • *Mixing Research Methodologies*
West Virginia University 📍 Morgantown, WV
2022, 2019, 2018, 2017

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| 2023 2017 | <ul style="list-style-type: none"> <i>Program Evaluation</i> West Virginia University 2023, 2022, 2021, 2020, 2019, 2018, 2017 | <ul style="list-style-type: none"> Morgantown, WV |
| 2021 2017 | <ul style="list-style-type: none"> <i>Social Network Analysis</i> West Virginia University 2021, 2017 | <ul style="list-style-type: none"> Morgantown, WV |
| 2021 2017 | <ul style="list-style-type: none"> <i>Statistical Methods 1</i> West Virginia University 2021, 2020, 2019, 2018, 2017 | <ul style="list-style-type: none"> Morgantown, WV |
| 2022 2020 | <ul style="list-style-type: none"> <i>Survey Research</i> West Virginia University 2022, 2020 | <ul style="list-style-type: none"> Morgantown, WV |

∞ MATHEMATICS (2005 - 2015)

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|-------------------|---|--|
| 2008 | <ul style="list-style-type: none"> <i>Business Calculus</i> Central Michigan University | <ul style="list-style-type: none"> Mount Pleasant, MI |
| 2009 | <ul style="list-style-type: none"> <i>College Algebra</i> Central Michigan University | <ul style="list-style-type: none"> Mount Pleasant, MI |
| 2012 | <ul style="list-style-type: none"> <i>Discrete Mathematics</i> Central Michigan University | <ul style="list-style-type: none"> Pittsburgh, KS |
| 2014 | <ul style="list-style-type: none"> <i>Elementary Statistics</i> Central Michigan University | <ul style="list-style-type: none"> Pittsburgh, KS |
| 2010 2009 | <ul style="list-style-type: none"> <i>Foundations of Statistics</i> Central Michigan University 2009, 2010 | <ul style="list-style-type: none"> Pittsburgh, KS |
| 2008 2007 | <ul style="list-style-type: none"> <i>Intermediate Algebra</i> Central Michigan University 2007, 2008 | <ul style="list-style-type: none"> Mount Pleasant, MI |
| 2007 | <ul style="list-style-type: none"> <i>Integral Calculus</i> Michigan Technological University | <ul style="list-style-type: none"> Houghton, MI |
| 2015 2014 | <ul style="list-style-type: none"> <i>Linear Algebra</i> University of Kansas 2014, 2015 | <ul style="list-style-type: none"> Lawrence, KS |
| 2013 | <ul style="list-style-type: none"> <i>Mathematical Thinking Grades 6-12</i> Western Michigan University | <ul style="list-style-type: none"> Kalamazoo, MI |

2014
|
2013



Mathematics Curriculum Grades 6-12
Western Michigan University
2013, 2014

Kalamazoo, MI

2005



Multivariable Calculus
Michigan Technological University

Houghton, MI

2007
|
2006



Single Variable Calculus
Michigan Technological University
2006, 2007

Houghton, MI



SERVICE

2022
|
2013



Associate Editor
Journal of MultiDisciplinary Evaluation



MEMBERSHIPS

2022
|
2012



American Evaluation Association