

Dr. Zachary K. Collier

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Webpage : www.education.udel.edu/faculty-bio/zachary-collier/
Github : <https://github.com/collierlaboratory>

ASSISTANT PROFESSOR

EDUCATION	University of Florida , Gainesville, Florida <i>PhD, Measurement and Statistics,</i>	<i>Aug' 15 - Aug' 18</i>
	University of Florida , Gainesville, Florida <i>Masters, Measurement and Statistics,</i>	<i>Aug' 13 - Aug' 15</i>
	Winthrop University , Rock Hill, South Carolina <i>Baccalaureate, Special Educatoin,</i>	<i>Aug' 09 - May' 13</i>

RESEARCH INTERESTS *Dr. Collier's area of expertise is the advancement and application of finite mixture modeling, particularly latent class and profile analyses. He also seeks to develop effective and efficient heuristic optimization data-mining-type search algorithms in **structural equation modeling and propensity score analysis** for emerging data intensive applications in educational and social policy. These intensive datasets include non-random attrition, incomplete longitudinal data, and selection bias.*

FUNDED

<i>Data Mining to Evaluate Politics and Policy-making in Education , University of Delaware Research Foundation Grants ,</i>	<i>pending</i>
<i>Data Mining to Evaluate Politics and Policy-making in Education , Ralph E. Powe Junior Faculty Enhancement Awards ,</i>	<i>pending</i>
<i>Difficulty processing speech in noise: What eye-gaze and brain responses can tell us about the relation between the listening environment and language development in bilingual infants at risk for language disorders , National Institute of Health ,</i>	<i>pending</i>
<i>Project ECHO + Stigma Reduction , National Institute of Health ,</i>	<i>pending</i>
<i>A Validation of the Recognizing Excellence in Learning and Teaching (RELATE) Tool for Special Education Classroom Observation , Spencer Foundation ,</i>	<i>pending</i>
<i>A Validation of the Recognizing Excellence in Learning and Teaching (RELATE) Tool for Special Education Classroom Observation , Institute for Education Sciences ,</i>	<i>pending</i>
<i>Methods for Unstructured and Difficult to use Data Lab: Start-Up , DSI ,</i>	<i>'20</i>
<i>The Big Educational Challenge Proposal , Educational Testing Service ,</i>	<i>'17</i>
<i>Dissertation Fellowship, Educational Testing Service ,</i>	<i>'17</i>
<i>Travel Grant, The University of Florida's Office of Graduate Minority Programs ,</i>	<i>'16</i>
<i>McKnight Doctoral Fellowship, The Florida Education Fund ,</i>	<i>'15</i>

AWARDS & ACHIEVEMENTS *Awarded the **Early Career Award** at the **The International Conference for High Per-***

formance Computing, Networking, Storage, and Analysis '19

Awarded the Data Science Institute Faculty Fellowship at the University of Delaware '18

Awarded the Dissertation Fellowship at the Educational Testing Service '17

Awarded the University Womens Club Scholarship at the University of Florida '16

Awarded the First Place Paper Award at the Florida Graduate Student Statewide Conference '16

Awarded the First Place Paper Award at the University of Florida Graduate Student Conference '16

Awarded the Distinguished Paper Award at the American Education Research Association '16

Awarded the Internship at the Educational Testing Service Summer '16

Awarded the Distinguished Paper Award at the Florida Education Research Association '15

Awarded the McKnight Doctoral Fellowship at the Florida Education Fund '15

PROFESSIONAL
EXPERIENCE

Assistant Professor, University of Delaware

Sept '18 - Present

- Educational Statistics and Research Methods
- Data Science Institute
- Center for Research in Education and Social Policy

Research Scientist, Educational Testing Service

Aug '17 - Aug '18

- Student and Teacher Research Center

Intern

Supervisors : Drs. Heather Buzick and John Lockwood

Jul '16 - Aug '16

Graduate Research Assistant

Supervisor : Dr. Walter L. Leite

May '14 - Aug '17

- Lastinger Center for Teaching and Learning

Special education teacher, Westwood Middle School

Aug '13 - May '14

- Gainesville, FL

High school teacher, New Hope Carolinas, Rock Hill, S.C.

Aug '12 - Aug '13

- Teacher in a treatment school for students with emotional and behavioral disorders

PUBLICATIONS

Under Review

Collier, Z., Leite, L., Karpyn, A. (under review). Neural networks to estimate generalized propensity scores for continuous treatments. *Evaluation Review*.

Collier, Z., Zhang, H., Bolton, A. (under review). Data mining to understand monte carlo simulations. *Journal of Experimental Education*.

Slicker, G., Barbieri, C., **Collier, Z.,** Hustedt, J. (under review). Parental involvement during the kindergarten transition and childrens early reading and mathematics skills. *Early Childhood Research Quarterly Journal*.

Gilden, C., Bailey, C., **Collier, Z.,** Johnson, B. (under review). Examining the relationship between leader characteristics and practices in the field of intellectual and developmental disabilities. *Intellectual and Developmental Disabilities*.

King, N. S., **Collier, Z.,** Johnson, B. G., Acosta, M. M., Southwell, C. N. (under review). Determinants of Black families access to a community-based STEM program: A latent class analysis. *Science Education*.

Accepted

Mitten, C., **Collier, Z.,** Leite, W. (accepted). Online resources for mathematics: exploring how and why they support student learning. *School Science and Mathematics Journal*.

Collier, Z. Leite, L. (forthcoming). Neural networks to estimate propensity scores for categorical treatments. *Journal of Experimental Education*.

Earnshaw, V., Eaton, L., **Collier, Z.,** Watson, R., Maksut, J., Ruciniski, K., Kelly, J., Kalichman, S. (2020). HIV stigma, depressive symptoms, and substance use. *AIDS Patient Care and STDs Journal*.

Leite, W. L., CetinBerber, D. D., HugginsManley, A. C., **Collier, Z.,** Beal, C. R. (2019). The relationship between algebra nation usage and highstakes test performance for struggling students. *Journal of Computer Assisted Learning*.

Leite, L., **Collier, Z.** (2018). Data mining in educational research. *The SAGE Encyclopedia of Educational Research, Measurement, and Evaluation*.

Collier, Z. Leite, L. (2017). Testing the effectiveness of three-step approaches with auxiliary variables in latent class and profile analysis. *Structural Equation Modeling: A Multidisciplinary Journal*, 24, 819-830.

MANUSCRIPTS IN PREPARATION

Collier, Z., Buzick, H., Lockwood, J. (in prep.). Bridging racial divides in the educator workforce using large-scale assessment data from perspective teachers.

Collier, Z., Zhang, H. (in prep.). Propensity score methods for continuous treatments in multilevel settings: a deep learning approach.

Bailey, C., Gilden, C., **Collier, Z.,** Johnson, B. (in prep.). Patterns in practices and behaviors of leaders working in the IDD service sector.

Collier, Z. McCoy, I. (in prep.). Software implementation of neural networks to estimate propensity scores.

Karpyn, A., Grajeda, S., Collier, Z. (in prep.). *Food in our neighborhood theory*.

PROGRAM
EVALUATION
REPORTS

Leite, L. Collier, Z. (2017). *Evaluation of Palm Beach County STEM Initiative*. (pp. 1-39). Gainesville, FL: Lastinger Center for Teaching and Learning, University of Florida.

Collier, Z., Leite, L. (2016). *Algebra Nation Usage on Ethnicity and Socio Economic Status* (pp. 1-5). Gainesville, FL: Lastinger Center for Teaching and Learning, University of Florida.

Mitten, C., Collier, Z., Leite, L. (2015). *Online Resources: Do They Affect Student Learning?* (pp. 1-19). Gainesville, FL: Lastinger Center for Teaching and Learning, University of Florida.

Collier, Z., Leite, L. (2014). *Algebra Nation Teacher Survey Report* (pp. 1-21). Gainesville, FL: Lastinger Center for Teaching and Learning, University of Florida.

Collier, Z., Leite, L. (2014). *How the use of Algebra Nation Impacts Schools* (pp. 1-37). Gainesville, FL: Lastinger Center for Teaching and Learning, University of Florida.

CONFERENCE
PRESENTATIONS

Collier, Z., Zhang, H. (2020, April). *Propensity Score Methods for Continuous Treatments in Multilevel Settings: A Deep Learning Approach*. American Education Research Association Conference. San Francisco, California.

Collier, Z., Zhang, H. (2020, April). *Cross Validation Techniques to Enumerate Subgroups in Finite Mixture Models*. American Education Research Association Conference. San Francisco, California.

Collier, Z., Zhang, H. (2019, October). *Cross Validation Techniques to Enumerate Subgroups in Finite Mixture Models*. Northeastern Education Research Association Conference. Trumbull, Connecticut.

W. L. Leite, Z. Jing, D. D. Cetin-Berber, A. C. Huggins-Manley, Z. K. Collier, C. R. Beal. (2019, April) *Quasi-experimental Evaluation of Usage Patterns of Virtual Learning Environments with Multilevel Mixture Models and Propensity Score Weighting*. American Education Research Association Conference. Toronto, CA.

W. L. Leite, Z. Jing, D. D. Cetin-Berber, A. C. Huggins-Manley, Z. K. Collier, C. R. Beal. (2018, November) *Quasi-experimental Evaluation of Usage Patterns of Virtual Learning Environments with Multilevel Mixture Models and Propensity Score Weighting*. Florida Education Research Association Conference. St Petersburg, FL.

Collier, Z., Leite, W. (2017, April). *Teaching Neural Networks to Estimate Propensity Scores*. American Education Research Association Conference. San Antonio, Texas.

Collier, Z., Buzick, H., Lockwood, J. (2017, April). *Bridging Racial Divides in the Educator Workforce using Large-Scale Assessment Data from Perspective Teachers*. American Education Research Association Conference. San Antonio, Texas.

Collier, Z., Leite, W. (2016, May). *Characterizing Latent Classes using Auxiliary Variables in Mixture IRT Models: A Simulation Study of the Influence of Different Response Scales on Measurement Invariance*. Modern Modeling Methods Conference. Mansfield, Connecticut.

Collier, Z., Leite, W. (2016, May). *Testing the Effectiveness of Three-Step Approaches with Auxiliary Variables in Latent Class and Profile Analysis*. Modern Modeling Methods Conference. Mansfield, Connecticut.

Collier, Z., Leite, W. (2016, April). *Testing the Effectiveness of Three-Step Approaches with Auxiliary Variables in Latent Class and Profile Analysis*. Florida Statewide Conference.

Gainesville, Florida.

Leite, W. Collier, Z. (2016, April). Modeling Cross-Classified Data With and Without the Crossed Factors Random Effects Interaction. American Education Research Association Conference. Washington, D.C..

Collier, Z., Leite, W. (2016, April). Testing the Effectiveness of Three-Step Approaches with Auxiliary Variables in Latent Class and Profile Analysis. American Education Research Association Conference. Washington, D.C.

Mitten, C., Collier, Z., Leite, W. (2016, April). Online Resources for Mathematics: Exploring How and Why they Support Student Learning. American Education Research Association Conference. Washington, D.C..

Cugini, S., Collier, Z., Leite, W., Adams, T. (2016, February). The Impact of Algebra Nation. Research Council on Mathematics Learning. Orlando, Florida.

Collier, Z., Leite, W. (2015, November). Testing the Effectiveness of Three-Step Approaches with Auxiliary Variables in Latent Class and Profile Analysis. Florida Education Research Association Conference. Altamonte Springs, Florida.

Mitten, C., Collier, Z., Leite, W. (2015, November). Online Resources for Mathematics: Exploring How and Why they Support Student Learning. Florida Education Research Association Conference. Altamonte Springs, Florida.

Collier, Z. Raborn, A (2015, April). Ethnicity Stability Detection in the SAT Critical Reading Subtest. Eleventh Annual SAGE Research Symposium. Gainesville, FL.

COMPUTER
SKILLS

Languages: C++, Python, R, MPLUS, L^AT_EX,

PROFESSIONAL
SERVICE

Editorial Board

2019- *The Journal of Experimental Education*

University of Delaware

2019- Program Chair, Educational Statistics and Research Methods

University of Delaware

2019- Co-Chair, Data Science Institute Symposium

American Education Research Association

2016-2017 Member, Robert L. Linn Distinguished Address Award Committee, San Antonio, Texas

Florida Education Research Association

2015 Member, Educational Researcher of the Year Award Committee, Altamonte Springs, Florida

2014 Member, Educational Researcher of the Year Award Committee, Cocoa Beach, Florida

Reviewer

2018- Reviewer, *Journal of the Royal Statistical Society*

2017-Present Reviewer, *Structural Equation Modeling Journal*

Ad Hoc Reviewer

2015 Reviewer, Journal of Educational and Behavioral Statistics

2015 Reviewer, Educational Researcher

Professional Affiliations

2017 American Evaluation Association

2017 Northeastern Educational Research Association

2015-Present Florida Education Research Association

2014-Present American Education Research Association