

# Xuran Wang, Ph.D.

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🌐 <https://engage.msu.edu/about/people/erec/wang-xuran>



## RESEARCH INTERESTS

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My primary research interests include curriculum sequencing, instructional strategies, and student motivation, particularly how their interactions shape academic achievement. I also conduct research in educational assessment and evaluation, with a focus on advancing equity in STEM education.

## EDUCATION

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<b>Ph.D. in Measurement and Quantitative Methods (MQM)</b> <i>College of Education, Michigan State University</i>	<b>2024</b>
<b>M.S. in Applied Statistics</b> <i>Department of Statistics and Probability, Michigan State University</i>	<b>2023</b>
<b>M.A. in Educational Psychology and Quantitative Methods</b> <i>Graduate School of Education, State University of New York at Buffalo</i>	<b>2015</b>
<b>B.E. in Computer Science</b> <i>Capital Normal University, Beijing, China</i>	<b>2011</b>
<b>B.S. in Psychology</b> <i>Capital Normal University, Beijing, China</i>	<b>2011</b>

## PROFESSIONAL POSITIONS

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<b>Assistant Professor</b> <i>Department of Counseling, Educational Psychology, and Special Education, Michigan State University</i>	<b>2026.03 - Current</b>
<b>Data Scientist &amp; Research Specialist</b> <i>Engaged Research and Evaluation Center, Michigan State University</i>	<b>2025.07 - Current</b>
<b>Research Associate</b> <i>National Assessment Center of Education Quality, Beijing, China</i>	<b>2015.07 - 2018.07</b>

## GRANTS & FELLOWSHIPS

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<b>2023</b>	Dissertation Completion Fellowship, Michigan State University, \$7,000
<b>2021</b>	Summer Research Fellowships, Michigan State University, \$6,000
<b>2020</b>	Summer Research Fellowships, Michigan State University, \$6,000
<b>2019</b>	Summer Research Development Fellowships, Michigan State University, \$5,000
<b>2019</b>	Robert L. Ebel Endowed Scholarship, \$5,000
<b>2018</b>	Robert L. Ebel Endowed Scholarship, \$5,000

## PUBLICATIONS

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### Peer Reviewed Journal Publications

1. **Wang, X.**, Houang, R.T., Schmidt, W.H. & Kelly, K. (2024). Relationship between opportunity to learn, mathematics self-efficacy, and math performance: Evidence from PISA 2012 in 63 countries and economies. *International Journal of Science and Mathematics Education*. Accepted on January 18. DOI: 10.1007/s10763-024-10446-6.
2. Schmidt, W.H., Xin, T., Guo, S. & **Wang, X.** (2022). Achieving excellence and equality in mathematics: Two degrees of freedom? *Journal of Curriculum Studies*, 54(6), 772–791. DOI: 10.1080/00220272.2022.2098536.
3. Xin, T., Jiang, Y. & **Wang, X.** (2018). From opportunity of education to opportunity to learn: A new perspective of educational equity. *Tsinghua Journal of Education*, 2, 18–24. DOI:10.14138/j.1001-4519.2018.02.001807

### Academic Reports

1. Andersson, B., Chen, P., **Wang, X.** & Xin, T. (2016). Methodological improvements for the national assessment of basic education quality. (for internal use only)
2. Wu, J., **Wang, X.**, Sheneman, G. & Herbowicz, T. (2026). Michigan 32n Out-of-School Time (OST) State Evaluation 2024–25 annual report.

### Working Papers

1. **Wang, X.**, Schmidt, W.H. & Houang, R.T. (under review after major revision). Measuring Opportunity to Learn Through Textbook Sequencing: Visual and Statistical Analyses of Algebra I Content Topics. *Canadian Journal of Science, Mathematics, and Technology Education*.
2. **Wang, X.**, Schmidt, W.H., Houang, R.T. & Yeager, D. S. (under review). Sequencing as Opportunity to Learn: Visual and Markov Chain Analyses of Algebra Textbooks. *Educational Studies in Mathematics*.
3. **Wang, X.** (in preparation). Does the relationship between opportunity to learn, mathematics self-efficacy, and math performance change over time? A multigroup SEM approach with PISA 2012 and 2022.
4. **Wang, X.**, Zhou, Y. & Xin, T. (in preparation). Exploring the impact of reduced class size on mathematics achievement in China: An optimal multilevel matching strategy approach.

## CONFERENCE PRESENTATIONS

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### Invited Speaker Session

1. Cogan, L. & **Wang, X.** (2018, April). Insights on educational excellence from the international context of PISA 2012. Invited Speaker Session at the 2018 American Educational Research Association (AERA) Annual Meeting, New York City, NY.

## Other Sessions (Paper, Roundtable, Poster)

1. **Wang, X.**, Schmidt, W.H. & Houang, R.T. (2025, April). Visual and model-based methods for exploring sequencing features of content topics in Algebra textbooks. Accepted by the 2025 AERA Annual Meeting, Denver, CO.
2. **Wang, X.**, Zhou, Y. & Xin, T. (2024, April). Exploring the impact of reduced class size on mathematics achievement in China: An optimal multilevel matching strategy approach. Presented at the 2024 AERA Annual Meeting, Philadelphia, PA.
3. **Wang, X.** (2023, April). Using cluster analysis for data mining in the large-scale research. Presented at the 2023 AERA Annual Meeting, Chicago, IL.
4. **Wang, X.** & Wu, Y. (2022, April). Path analysis of opportunity to learn, mathematics self-efficacy and performance: Evidence from PISA 2012. Presented at the 2022 AERA Annual Meeting, San Diego, CA.
5. **Wang, X.** (2021, July). The common trends and differences of students' opportunity to learn, cognitive activation and their effects on the mathematics literacy: Evidence from six countries/districts. Accepted by the 2021 World Education Research Association (WERA) Visual Focal Meeting.
6. **Wang, X.** (2021, April). Effects of opportunity to learn on students' mathematics self-efficacy and math performance: Regression analysis with PISA 2012 63 countries and economies. Presented at the 2021 AERA Visual Annual Meeting.
7. **Wang, X.** & Wu, Y. (2020, April). Exploring the effects of math self-efficacy on the gender gap in mathematics literacy: New findings from PISA 2012. Presented at the 2020 AERA Visual Annual Meeting.
8. **Wang, X.** & Xin, T. (2017, April). The role of opportunity to learn on math study: Evidence from PISA 2012 China trial. Presented at the 2017 AERA Annual Meeting, San Antonio, TX.
9. **Wang, X.** & Xin, T. (2016, April). The effect of time involved in math activities on performance: Multilevel analysis from PISA 2012. Presented at the 2016 AERA Annual Meeting, Washington, D.C.
10. **Wang, X.** (2015, April). Exploring the effects of single-sex schooling and math self-efficacy on the gender gap in mathematics performance: Multilevel analysis of PISA 2012 data from South Korea and Hong Kong. Presented at the 2015 AERA Annual Meeting, Chicago, IL.

## TEACHING EXPERIENCES

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### Teaching at MSU (graduate level)

- Teaching Assistant, CEP 932: Quantitative Methods in Educational Research I - Fall 2019, 2020 & Spring 2022
- Teaching Assistant, CEP 933: Quantitative Methods in Educational Research II - Spring 2020, 2021 & 2024

## RESEARCH EXPERIENCE

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### Research Specialist

2025 - current

*Michigan OST Funding (32N) Project, Michigan State University*

- Led quantitative and qualitative analysis of attendance, youth, family, and site manager data, encompassing nearly 90,000 participants across 700+ program sites.
- Developed visualizations, clustering models, and summary tables to identify operating and participation patterns.
- Applied LLM for open-ended survey responses, uncovering key themes in youth and parent responses, replacing real people's names and detected typos using Python.
- Produced 100+ grantee-specific reports linking OST participation to improvements in academic performance and soft-skill development.

*Michigan Great Start Readiness Program Evaluation, Michigan State University*

- Addressed methodological challenges (school mobility, ordinal outcomes, nonignorable missing data) using cross-classified random effects models (CCREMs).
- Estimated program impacts on long-term academic outcomes and absenteeism to inform education policy and practice.

### Research Assistant

2019 - 2024

*Center for the Study of Curriculum Policy, Michigan State University*

- Developed and analyzed the sequential characteristics of textbook.
- Developed a graphical way to visually represent the sequencing of entire textbooks.
- Utilized Markov chain techniques and model-based approach to generate quantitative indicators for measuring sequencing characteristics.
- Two first-authored manuscripts are currently under review.

*Center for the Study of Curriculum Policy, Michigan State University*

- Applied quantitative methods to explore approximations of causal mechanisms in classroom.
- Developed a new conceptual framework.
- Utilized path analysis (PA) and regression models to reveal the relationships between students' math self-efficacy, learning opportunities and math performance.
- Published in the *International Journal of Science and Mathematics Education* in 2024.

*Office of the Provost, Michigan State University*

- Analyzed and evaluated the impact of living on campus on student outcomes.
- Cleaned and merged various students' datasets by key variables.
- Conducted descriptive analysis of differences between students live-on and off-campus by different groups.
- Conducted propensity score matching (PSM) modeling to minimize selection bias when examining the relationship between living on campus in the second year and student outcomes.

## Research Associate

2015 - 2018

*National Assessment Center of Education Quality, Beijing Normal University*

- Analyzed a restricted Chinese dataset to explore the relationship between learning opportunities, socioeconomic status, and math performance using HLM.
- Published in the *Journal of Curriculum Studies* in 2022.

*National Assessment Center of Education Quality, Beijing Normal University*

- Examined class size reduction and its impact on student performance in China.
- Used an optimal multilevel matching method to evaluate the effect of class size on students' performance.
- Applied non-linear modeling to determine the optimal class size range for maximizing student learning outcome.
- Accepted by the 2024 American Educational Research Association (AERA) Meeting.

## SKILLS & QUALIFICATIONS

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### Programming Skills

Proficiency in R, SPSS, Python, HLM, Mplus, and SAS

### Research Methods

Linear Regression Modeling

Design of Experiments (DOE)

Multivariate Data Analysis

Generalized Linear Model (GLM)

Item Response Theory (IRT)

Multilevel Data Analysis (MLM)

Propensity Score Matching (PSM)

Structural Equation Modeling (SEM)

## PROFESSIONAL SERVICES

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### Ad-hoc Journal Reviewer

- Educational Researcher
- International Journal of Educational Research
- Mathematical Thinking and Learning

### Conference Peer Reviewer

American Educational Research Association (AERA) Annual Meeting - Division D (Measurement and Research Methodology) Section 2 (2023)

- SIG - Advanced Studies of National Databases (2017, 2021, 2023, 2024)
- SIG - NAEP Studies (2017, 2021)
- SIG - Multilevel Modeling (2017, 2020)

### Other Services

2025 AERA Roundtable Session Chair

## Professional Affiliations

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- American Educational Research Association (AERA)
- World Education Research Association (WERA)