Curriculum Vitae

Weiying Li

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EDUCATION

PhD **University of California, Berkeley**
Learning Sciences and Human Development, Expected May 2026
Designated Emphasis in New Media
PI: Marcia Linn

Dissertation*:* Iteratively Co-Designing AI Adaptive Dialogs with Research-Practice Partnerships to Enhance Learning in Middle School Science Classrooms
Areas of Expertise: AI in Science Education, Mixed Methods, Learning Analytics

MA **Renmin University of China**
Human Resource Management, May 2019

BS **Renmin University of China**
Applied Psychology, May 2017

PUBLICATIONS

1. **Li, W**. (2025). Applying Natural Language Processing Adaptive Dialogs to Promote Knowledge Integration During Instruction. *Education Sciences*, 15(2), 207.
2. **Li, W**., Chang, H. Y., Bradford, A., Gerard, L., & Linn, M. C. (2024). Combining Natural Language Processing with Epistemic Network Analysis to Investigate Student Knowledge Integration within an AI Dialog. *Journal of Science Education and Technology*, 1-14.
3. LIU Xing-tong, **LI Wei-ying**, HE Si-nan, LI Xuan, ZHOU Mo-li, GUAN Dai-song. (2020). The effect of visual cue design on mobile AR interaction experience. *Chinese Journal of Ergonomics.* (05), 41-44+56.
4. **Li Weiying**, Zhang Jing, Li Yongna, Wang Yehui. (2016). A Stroop Effect of Active Procrastination Behaviors and the Achievement Motivation. *Psychological Exploration*. Vol. 36, No. 4, 354–357.
-Psychological Exploration is one of the top academic psychological journals in the CSSCI (Chinese Social Sciences Citation Index)
5. Li, Yongna, **Li, Weiying**, & Wang, Zhe. (2015). Visual working memory capacity for own-and other-race faces: effects of set size and face features. *Journal of Vision*, 15(12), 670

CONFERENCE PROCEEDINGS

1. **Li, W**., Liao, Y., Steimel, K., Bradford, A., Gerard, L., & Linn, M. (2024, July). Teacher-informed Expansion of an Idea Detection Model for a Knowledge Integration Assessment. In Proceedings of the Eleventh ACM Conference on Learning@ Scale (pp. 447-450). https://doi.org/10.1145/3657604.3664687

2. Bradford, A., **Li, W.**, Gerard, L., & Linn, M. C. (2024, July). Comparing Expert and ChatGPT-authored Guidance Prompts. In Proceedings of the Eleventh ACM Conference on Learning@ Scale (pp. 388-392). https://doi.org/10.1145/3657604.3664669
3. **Li, W.**, Gerard, L., Lim-Breitbart, J., Bradford, A., Linn, M. C., Riordan, B., & Steimel, K. (2023). Explaining Thermodynamics: Impact of an Adaptive Dialog based on a Natural Language Processing Idea Detection Model. Proceedings of International Conference of the Learning Sciences (ICLS) 2023 (pp. 1306-1309). https://doi.org/10.22318/icls2023.199424
4. Bradford, A., **Li, W.**, Steimel, K., Riordan, B. & Linn, M.C. (2023). Adaptive dialog to support student understanding of climate change mechanisms and who is most impacted. Proceedings of ICLS 2023 (pp.816-823). https://doi.org/10.22318/icls2023.681776
5. Holtmann, M., Gerard, L., **Li, W.**, Linn, M.C., Riordan, B & Steimel, K. (2023). How Does an Adaptive Dialog Based on Natural Language Processing Impact Students from Distinct Language Backgrounds? Proceedings of ICLS 2023 (pp. 1350-1353). https://doi.org/10.22318/icls2023.921177
6. **Li, W**. (2025), Designing a Web-based Food Justice and Photosynthesis Science Inquiry Unit with a Research Practice Partnership. Paper presented at the 2025 AERA Division C Roundtable.
7. **Li, W**., Bradford, A., Gerard, L., Linn, M.(2023). Responding to students' science ideas in a Natural Language Processing-based Adaptive Dialogue. Poster presented at the 2023 AERA Division C
8. Bradford, A., **Li, W.**, Gerard, L., Steimel, K., Riordan, B., Lim-Breitbart, J., & Linn, M.C. (2023). Applying idea detection in dialog designed to support integrated revision. Poster presented at the 2023 AERA
9. **Li, W.** & Linn, M.(2022). Responses of rural Chinese teachers to workshops on culturally relevant constructivist pedagogy. Proceedings of ICLS 2022 (pp. 1253–1256). https://dx.doi.org/10.22318/icls2022.1253
10. Wu, S., He, S., Peng, Y., **Li, W.**, Zhou, M., & Guan, D. (2019, June). An Empirical Study on Expectation of Relationship Between Human and Smart Devices—With Smart Speaker as an Example. In 2019 IEEE Fourth International Conference on Data Science in Cyberspace (DSC)(pp. 555-560). IEEE. DOI: 10.1109/DSC.2019.00090

RESEARCH EXPERIENCE

Graduate Researcher, Technology Enhanced Learning in Science (TELS) Lab | UCB Sep 2020 – Present

- Lead **research-practice partnerships** with 40+ teachers across six diverse schools to co-design AI adaptive dialog systems embedded in web-based science curricula, serving thousands of K-12 students in topics including photosynthesis, thermodynamics, and food justice.
- Develop and refine **Natural Language Processing models** using pretrained transformer architectures (BERT, SciBERT, DeBERTa v3) to detect students' scientific ideas in real time and generate tailored adaptive prompts that scaffold knowledge integration
- Conduct **mixed-methods** research combining quantitative analysis (Mixed effects models, Generalized Estimating Equations, Topic Modeling, Transformer-based semantic analysis, NER, WordNet-guided lexical analysis) with qualitative methods (classroom observations, teacher

interviews, student case studies, Epistemic Network Analysis) to evaluate learning outcomes and implementation processes
- Design and facilitate **professional development workshops** for teachers on integrating AI-enhanced learning tools and culturally responsive pedagogy into classroom practice across California and rural China
- Co-design **culturally relevant science inquiry** curricula with teachers and community partners in East Oakland, connecting scientific concepts to locally meaningful contexts including food access and environmental justice

UX Researcher (Full-time), Baidu AI Interaction Design Lab | Beijing, China June 2019 – June 2020

- Led research and development of **mobile AR (Augmented Reality)** learning experiences, with experimental findings translated into design principles adopted across all Baidu AR applications (150M+ daily active users)
- Designed and conducted controlled experiments evaluating impact of **VR** avatar visual styles on learning performance and attention focus of students aged 6–12, demonstrating up to 20% gains in task engagement
- Developed **teacher-facing analytics** dashboard tracking student engagement and performance metrics; conducted longitudinal analysis to inform product enhancements
- Applied **social network analysis** using UCINET and R to online education forums, generating visualizations of interaction patterns to inform feature design supporting teacher and learner engagement
- Analyzed behavioral data from 2M+ daily active users to build user profiles and identify design optimizations

GRANT PROJECTS

Designing Traditional Chinese Medicine (TCM) science inquiry curriculum for rural Chinese middle school students with a Research Practice Partnership

PI & Lead Researcher | Berkeley, USA & Wuhan, China June 2021 – Dec 2023

- Funded a total of $37,000 by the Barbara White Bequest Fund, the Indigenous Student Research Fellowship from UC Berkeley Center for the Science of Psychedelics, and the Berkeley Center of New Media Research Award.
- In partnership with local community leaders, TCM doctors, and four rural science teachers, we developed a TCM science inquiry unit connecting traditional medicine practices to scientific reasoning for 80 8th-grade students in rural China.
- Conduct iterative design cycles to develop AI dialogs that recognize and respond to navigation of multiple epistemological frameworks.
- Evaluate impacts on student cultural competence and epistemological awareness through mixed-methods research.

The relationship between work stress and the subjective well-being of couriers, with resilience as a mediator

PI & Lead Researcher | Beijing & Tianjin, China Aug 2015 – Oct 2017

- Funded ¥30,000 by National University Student Innovation Program in China (Top award for Chinese undergraduate research).
- Led a team of 5 undergraduates to interview 35 couriers working in Beijing and Tianjin for two years. Designed semi-structured interviews and questionnaires. Conducted hierarchical regression analysis of two-year longitudinal data using R and AMOS.
- Won the Top Team Award (Highest National Honor). Won the Best Presentation team award at the 10th National University Student Innovation Annual Meeting.

FELLOWSHIPS, AWARDS, AND ACHIEVEMENTS

- Data Science & AI Fellowship, UC Berkeley D-lab, 2025-2026
- Diversity and Community Fellowship, UC Berkeley, 2025-2026
- Dissertation Completion Fellowship, School of Education, UC Berkeley, 2025-2026
- 2025 AERA Division C Graduate Student Mentoring Program Fellow, 2025
- Indigenous Student Research Fellowship, UC Berkeley Center for the Science of Psychedelics, May 2022
- Facilitator's Choice Award, 2022 STEM For All Video Showcase, May 2022
- Barbara White Bequest Fund Award, School of Education, UC Berkeley, May 2022
- Summer Research Award, Berkeley Center of New Media, UC Berkeley, 2023
- Summer Award, School of Education, UC Berkeley, 2022, 2023, 2024
- Continuing Student Fellowship, School of Education, UC Berkeley, 2022, 2023, 2024
- Conference Travel Fund, School of Education, UC Berkeley, 2022, 2023, 2024, 2025
- Conference Travel Fund, Berkeley Center of New Media, UC Berkeley, 2022, 2023, 2024, 2025
- Exceptional Project, Wuhan City Department of Education, May 2021
- The Joseph R. Levenson Chinese Studies Award, UC Berkeley Center for Chinese Studies, May 2021
- Shark Tank Competition Finalist, AERA 2021 Annual Meeting Division C, April 2021

TEACHING AND MENTORING EXPERIENCE

Teaching Experiences, UCB | Berkeley, CA, US Sept 2021 – Present

- Data Mining and Analytics
    - Monitored class with 500+ students by answering live chat, leading breakout room discussions.
    - Taught lab sessions on data preprocessing and skip-gram models.
    - Organized weekly office hours to support students applying ML to final projects.
- Research Methods in Science and Mathematics K-12 Education
    - Taught lab sessions on qualitative data collection (structured interviews, field observations), thematic analysis, and quantitative methods including experimental design, t-tests, ANOVA, correlation, and chi-square tests.
    - Mentored 20 undergraduate students across three semesters on education research projects; supported poster presentations at semester-end.
    - Supported students to submit and present their research at AERA
- Educational Testing in the USA, School of Education
    - Led lab sessions on survey design, construct map design, and Item response theory (IRT).

    - Designed formative assessment questions for the midterm and final exams.
- Python Data Visualization, Instructor of record, D-lab
    - Taught 4-hour workshops on data visualization using Matplotlib and Seaborn (histograms, bar plots, box plots, line plots, scatter plots).
    - Students included undergraduates, graduate students, and scholars from humanities and social sciences.

Mentoring Experiences, UCB | Berkeley, CA, US Sept. 2021 – Present

- Mentored 24 undergraduates through the CalTeach Summer Research Institute.
    - Co-authored 2 academic papers with student mentees.
    - Wrote 4 recommendation letters and coached students post-graduation on job search and networking.
- Nominated for the ***2025 Outstanding Graduate Student Peer Mentor Award***
    - "*Great mentors see what's in our hearts and minds, and help us breathe life into the spark that's already in there. Weiying does this seemingly effortlessly.*" — Graduate mentee
    - "*Her mentorship excels beyond the boundaries of a role or class—she cares very deeply about you, your goals, motivations, and offers the warmest support*." — Undergraduate mentee

ACADEMIC SERVICE

Reviewed for journals:

- Journal of Science Education and Technology
- International Journal of Science and Mathematics Education

Reviewed for conferences:

- International Society of Learning Sciences (ISLS), including ICLS and CSCL conferences
- American Educational Research Association (AERA)
- Learning @ Scale
- International Conference on Artificial Intelligence and Education (AIED)

Departmental service:

- Student Liaison for PhD students at the Berkeley School of Education Student Forum
- Graduate Student Representative for the Research Committee at the Berkeley School of Education (2024-2025)
- Graduate Student Representative for the Equity, Climate and Culture Committee at the Berkeley School of Education (2025-2026)
- Organize and lead weekly writing groups for doctoral students across campus for three semesters (2022-2024)

Conference service:

- Chair at 2025 AERA Annual Meeting Division C - Learning and Instruction/Division C - Section 1d: Science Roundtable

SKILLS

Evidence-Based Research Methods

- *Advanced Quantitative Analysis*
    - **Mixed-effects models** (CLMM, GEE) for longitudinal and nested educational data
    - **Computational analysis** of student discourse using NLP: transformer-based semantic analysis, topic modeling, NER, clustering, WordNet-guided lexical analysis, semantic-axis masked-LM probing
    - **Epistemic Network Analysis** for quantifying epistemic connections in student-written responses
    - **Experimental design**: A/B testing, randomized controlled trials, quasi-experimental methods
    - **Tools**: Python (pandas, scikit-learn, statsmodels, spaCy, transformers), R, SPSS, MATLAB, Tableau, MySQL
- *Qualitative & Mixed-Methods Research*
    - 5+ years **design-based research** in K-12 science classrooms in rural China and California
    - Data collection: interviews, focus groups, classroom observation, ethnographic fieldwork
    - Analysis: Thematic analysis, grounded theory coding, discourse analysis, triangulation
- *Learning Science Expertise*
    - Knowledge integration framework, justice-centered science pedagogy, culturally relevant pedagogy

UX Research

- Cognitive walkthroughs, heuristic evaluations, user profile, A/B Testing

Media Operation

- Translated AR research results into a social media article (in Mandarin), generating over 18,000 views and cited by Chinese UX design influencers, including IXDC.

Language

- Chinese and English