

Danielle R. Thomas, EdD.

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Carnegie Mellon University || Human-Computer Interaction Institute

5000 Forbes Ave. Pittsburgh, PA 15213

<https://scholar.google.com/citations?user=PMEBVS8AAAAJ&hl=en&oi=ao>

PROFESSIONAL HIGHLIGHTS

- Rapidly progressing researcher investigating innovative AI and human-AI tutoring systems

Fun fact: In the past two years, Danielle has first-authored in over a dozen journals and conferences, including within *Artificial Intelligence in Education* and *Learning Analytics and Knowledge*.

- Over ten years experience in K-12 education demonstrating consistent student growth

Fun fact: Danielle was rated *accomplished*, the highest level of distinction, every year of her teaching.

- Documented success in creating and building academic programs from the ground up

Fun fact: While in K-12 education, Danielle created the first and only STEM pathway for grades 7-12 in her County and initiated robotics programs, leading her middle school students to State competition.

- Experience developing special programs and interventions for at-risk or marginalized students

Fun fact: Danielle founded the peer-to-peer mentoring programs, *Junior STEM* and *STEM Ambassadors*, for middle and high school students, increasing awareness in STEM for girls and youth.

- Academic degrees in both *hard* sciences and social sciences with diverse content knowledge

Fun fact: Once an aspiring chemist, Danielle was the first graduate student in her university's history to assist in teaching Physical Chemistry and solely instruct labs, receiving full academic scholarship

CAREER EXPERIENCE

Director of Research to Practice

July 2025-present

National Tutoring Observatory

Co-PIs: Rene Kizilcec, Justin Reich, Ken Koedinger, Rachel Slama, Doug Pietrzak

Cornell University Ann S. Bowers College of Computing and Information Science

Cornell University, Ithaca, NY

Systems Scientist/Faculty

March 2023-present

Human-Computer Interaction Institute

Carnegie Mellon University, Pittsburgh, PA

Research Lead

Aug. 2021-present

PLUS (Personalized Learning²)

PI: Kenneth R. Koedinger

Carnegie Mellon University, Pittsburgh, PA

Interim Research Director**Dec. 2024-June 2025**

National Tutoring Observatory

Co-PIs: Rene Kizilcec, Justin Reich, Ken Koedinger, Rachel Slama, Doug Pietrzak

Cornell University Ann S. Bowers College of Computing and Information Science

Cornell University, Ithaca, NY

Postdoctoral Research Fellow**Aug. 2021-Feb. 2023**

Human-Computer Interaction Institute

Carnegie Mellon University, Pittsburgh, PA

PLUS (Personalized Learning²)*Bridging Opportunity Gaps in Urban School Contexts: Techniques and Tools for Personalized Learning Through AI and Culturally Responsive Mentoring*

PIs: Profs. Kenneth R. Koedinger & Lee Branstetter

Multiplier Effects in Education

Exploring Cognitive, Metacognitive, and Motivational Multiplier Effects in Middle School Math

PIs: Profs. Kenneth R. Koedinger, Vincent Aleven, & Judith Harackiewicz

Senior Lecturer/Part-time Faculty**June 2021-Aug. 2022**

University of Akron, Akron, OH

Redesigned objectives, assignments, and syllabi of courses for the MS in educational administration and principal licensure programs, aligning with *Ohio Assessments for Educators* accreditation.**Supervisor of School Improvement & Curriculum****2019-2021**

Warren City Schools, Warren, OH

- Administrator in a mid-size urban setting serving grades PK-8 overseeing curriculum and instruction across contents ensuring continuous improvement and data-driven decision making
- Provided services for English language learners, students with disabilities, underrepresented populations, homeless youth, and gifted students
- Managed requirements of the *Ohio Improvement Process*, *Third Grade Reading Guarantee*, and math interventions using building-wide math and literacy frameworks

District STEM Instructional Coach**2016-2019**

Austintown Local Schools, Austintown, OH

- Instructional coach and founder of District STEM program serving K-12
- Expansive knowledge in areas of Engineering and Computer Science through *Project Lead the Way* creating a Computer Science pathway for grades 7-12
- Wrote numerous grant proposals to provide computer science, robotics, and STEM education focusing on underrepresented and minority students

STEM Lead Teacher**2012-2016**

Austintown Local Schools, Austintown, OH

- Planned, taught, and assessed math, science, and STEM courses to middle school students providing a blended learning, project-based learning setting
- Lead teacher in supporting colleagues in 21st century and STEM initiatives

Tutor**2010-2012**

Club Z! Tutoring Services, Redmond, WA

- Provided private, in-home tutoring to high school students

Part-Time Faculty

2007-2008

Youngstown State University, Youngstown, OH

- Taught General Chemistry I, General Chemistry II, and Physical Chemistry Labs

Graduate/Teaching Assistant

2004-2007

Youngstown State University, Youngstown, OH

- Taught General Chemistry I, General Chemistry II, and Physical Chemistry Labs
- Conducted solid-state research in the area of inorganic chemistry with a focus on heavy metal contamination and synthesis of safer, inorganic pigments

EDUCATION

EdD in Educational Leadership

2021

Youngstown State University, Youngstown, OH

Committee: Karen H. Larwin (chair), Patrick Spearman, Kathleen Cripe, Charles Vergon

Dissertation: *A Pathway to Success? A Longitudinal Study Using Hierarchical Linear Modeling of Student and School Effects on Academic Achievement in a Middle School STEM Program*

GPA 4.0

MS in Educational Administration

2015

Youngstown State University, Youngstown, OH

GPA 4.0

MS in Inorganic Chemistry

2007

Youngstown State University, Youngstown, OH

Thesis: *Synthesis and Characterization of $TiN_xO_yF_z$ Compounds and Studies of Mixed Metal N-F and N-O-F via X-ray Powder Diffraction and Other Analytical Techniques*

Charles Cushwa Commercial Graduate Fellowship

GPA 4.0

BS in Chemistry

2004

Youngstown State University, Youngstown, OH

GPA 3.78 *summa cum laude*

GRANTS AWARDED

AIMS EduData Initiative

2025 - 2026

Improving Persistence through Adaptive Goal Setting

PI: Conrad Borchers, \$10,000

Senior Personnel: Danielle R. Thomas

Spencer Vision Grant

2025 - 2026

Leveraging AI to Build Large-Scale Research Infrastructure to Accelerate Teaching and Learning for Underrepresented Students

PIs: Danielle R. Thomas, Ken Koedinger, Rachel Slama, Justin Reich, Rene Kizilcec, \$75,000

J-PAL North America

2024 - 2025

It Takes a Village (Plus AI): A Pilot Study on AI-Driven Math Tutoring to Revolutionize Learning

PIs: Danielle R. Thomas, Ken Koedinger, \$75,000

Google DeepMind Research Award

2024 - 2025

Using Generative AI to Assess Tutors in Training and Real-life Performance

PIs: Danielle Thomas & Ken Koedinger, \$30,000

Martha Holden Jennings Foundation

2018 - 2019

Using Science Inquiry to Increase Student Achievement in All Subjects

PI: Danielle Thomas, \$2,999.

Arcelor Mittal Foundation

2018 - 2019

Project Lead the Way

PI: Danielle Thomas

Austintown Middle School, \$5,000 & \$15,000

Martha Holden Jennings Foundation

2016 - 2017

Using Project-Based Learning and Application to Build Science Knowledge in the K-2 Classroom

PI: Danielle Thomas, \$3,000

Martha Holden Jennings Foundation

2016 - 2017

Using Inquiry and Application to Build Knowledge and Understanding in Science

PI: Danielle Thomas, \$3,000

FirstEnergy Corporation

2016 - 2017

Using Bicycle Dynamos and Windmills to Teach Energy Conversion and Renewable Resources

Co-PIs: Danielle Thomas, Jason Freudenberg, \$1,500

GRANTS AWARDED (Considerable preparation assistance)

PLUS–Personalized Learning Squared: Doubling Math Learning by Optimizing Tutoring from Training to Practice

2022 - 2027

Schmidt Futures & Walton Family Foundation

Learning Engineering Virtual Institute (LEVI)

PI: Ken Koedinger, \$10 million awarded

Carnegie Mellon University, Carnegie Learning, Inc., Stanford University

PLUS–Personalized Learning Squared

2024 - 2025

J-PAL The Abdul Latif Jameel Poverty Action Plan

PI: Ken Koedinger, \$75,000 awarded

PLUS–Personalized Learning Squared Accelerate - The National Collaborative for Accelerated Learning PI: Shivang Gupta, \$250,000 awarded Carnegie Mellon University	2024 - 2025
PLUS–Personalized Learning Squared Overdeck Family Foundation PI: Ken Koedinger, \$200,000 awarded	2024 - 2025
Bridging Opportunity Gaps in Urban School Contexts <i>Techniques and Tools for Personalized Learning Through AI and Culturally Responsive Mentoring</i> Chan Zuckerberg Initiative Grant Bill & Melinda Gates Foundation Grant PI: Ken Koedinger, \$1.8 million awarded Carnegie Mellon University	2020 - 2022
Addressing Opportunity Gaps in Education Richard King Mellon Foundation The Heinz Endowments PI: Lee Branstetter Carnegie Mellon University	2020 - 2023
Multiplier Effects in Education <i>Classroom Studies - Exploring Cognitive-Metacognitive-Motivational Multiplier Effects in Middle Years in Math</i> The Bill & Melinda Gates Foundation Grant PIs: Ken Koedinger, Vincent Aleven, Judith Harackiewicz Carnegie Mellon University	2018 - 2022
School Quality Improvement Grant. Warren City Schools, \$500,000	2019 - 2022
Inspiring Minds Remote Learning Grant <i>Inspiring Minds</i> in partnership with Warren City Schools, \$125,000.	2020 - 2021

CERTIFICATIONS & LICENSURE

Meta-Analysis Training Institute (National Center for Education Research)	July 2023
Ohio Principal License Grades 4-9 & 5-12	valid thru 2026
Ohio Integrated Science Grades 4-12	valid thru 2026
Ohio Integrated Mathematics Grades 4-12	valid thru 2026
Cognitive Coaching Certification	July 2018

CONFERENCES & JOURNAL PUBLICATIONS (FULLY REVIEWED)

Google Scholar: <https://scholar.google.com/citations?user=PMEBVS8AAAAJ&hl=en&authuser=2>

Thomas, D. R., Borchers, C., & Koedinger, K. R. (2025). Beyond agreement: Rethinking ground truth in educational AI annotation. In *Artificial Intelligence in Measurement and Education Conference (AIME-CON)*. ACL Anthology. [[preprint](#)]

Bhushan, S., **Thomas, D. R.**, Borchers, C., Raghuvanshi, I., Abboud, R., Gatz, E., Gupta, S., & Koedinger, K. R., (2025). Detecting LLM-generated short answers and effects on learner performance. In *European Conference on Technology-Enhanced Learning (ECT-EL)*. Cham: Springer Nature Switzerland. [27% acceptance rate] [[preprint](#)].

Thomas, D. R., Borchers, C., Bhushan, S., Gatz, E., Gupta, S., & Koedinger, K. R. (2025). LLM-generated feedback supports learning when learner choose to use it. In *European Conference on Technology-Enhanced Learning (ECT-EL)*. Cham: Springer Nature Switzerland. [27% acceptance rate] [[preprint](#)].

Thomas, D. R., Borchers, C., Bhushan, S., Kakarla, S., Houk, A., Abboud, R., Gatz, E., Gupta, S., & Koedinger, K. R. (2025). Improving open-response assessment with LearnLM. In *International Conference on Artificial Intelligence in Education: 26th International Conference (AIED 2025), Palermo, Italy, July 21-25, 2025, Proceedings, Part I*. Cham: Springer. [16% acceptance rate] [[link](#)].

Gurung, A., Lin, J., Gutterman, J., **Thomas, D. R.**, Houk, A., Gupta, S., Brunskill, E., Branstetter, L., Koedinger, K. R., & Aleven, V. (2025). Human tutoring increases AI tutor use, leading to better learning outcomes. In *International Conference on Artificial Intelligence in Education: 26th International Conference (AIED 2025), Palermo, Italy, July 21-25, 2025, Proceedings, Part I*. Cham: Springer. [19% acceptance rate] [[link](#)].

Thomas, D. R., Borchers, C., Lin, J., Kakarla, S., Gatz, E., & Koedinger, K. R. (2025). Does multiple choice have a future in the age of generative AI? A posttest-only RCT. In *LAK25: 15th International Learning Analytics and Knowledge Conference (LAK 2025), March 3-8, 2024, Dublin, Ireland*. ACM, New York, NY, USA, 17 pages. [30% acceptance rate] [[link](#)]

Thomas, D. R., Borchers, C., Lin, J., Kakarla, S., Gatz, E., & Koedinger, K. R. (2025). Do tutors learn from equity training and can generative AI assess it? In *LAK25: 15th International Learning Analytics and Knowledge Conference (LAK 2025), March 3-8, 2024, Dublin, Ireland*. ACM, New York, NY, USA, 17 pages. [30% acceptance rate] [[link](#)]

Thomas, D. R., Lin, J., Bhushan, S., Abboud, A., Gatz, E., Gupta, S., & Koedinger, K. R. (2024). Learning and AI evaluation of tutors responding to students engaging in negative self-talk. In *Proceedings of the Eleventh ACM Conference of Learning @ Scale (L@S '24), July 18-20, 2024, Atlanta, Georgia*. [[link](#)]

Lin, J., Chen E., Han, F., Gurung, A., **Thomas, D. R.**, Tan, W., Nguyen, N., Koedinger, K. R. (July, 2024). How Can I Improve? Using GPT to highlight the desired and undesired parts of open-ended responses. In *The Proceedings of the 17th International Conference on Educational Data Mining (EDM '24) Atlanta, Georgia. July 14-17, 2024*. [[link](#)]

Lin, J., Han, Z., **Thomas, D. R.**, Gurung, A., Gupta, S., Aleven, V., & Koedinger, K. R. (2024) How can I get it right? Using GPT to rephrase incorrect trainee responses. *International Journal of Artificial Intelligence in Education*. 1-27. [[link](#)]

Thomas, D. R., Gatz, E., Gupta, S., Aleven, V., & Koedinger, K. R. (2024). The neglected 15%: Positive effects of hybrid human-AI tutoring among students with disabilities. In *International Conference on Artificial Intelligence in Education: 25th International Conference (AIED 2024), Recife, Brazil, July 2-8, 2024, Proceedings, Part I*. Cham: Springer. [23% acceptance rate] [[link](#)]

Thomas, D. R., Lin, J., Gatz, E., Gurung, A., Gupta, S., Norberg, K., Fancsali, S. E., Aleven, V., Branstetter, L., Brunskill, E., Koedinger, K. R. (2024). Improving student learning with hybrid human-AI tutoring: A three-study quasi-experimental investigation. In *LAK24: 14th International Learning Analytics and Knowledge Conference (LAK 2024), March 18-22, 2024, Kyoto, Japan*. ACM, New York, NY, USA, 12 pages. [30% acceptance rate] [[link](#)]

Thomas, D. R., & Larwin, K. H. (2023). A meta-analytic investigation of the impact of middle school STEM education: Where are all the students of color? *International Journal of STEM Education*. 10(43). 1-25. [[link](#)]

Huang, Y., Dang, S., Richey, J., Chhabra, P., **Thomas, D. R.**, Asher, M., Lobczowski, N., McLaughlin, E. A., Harackiewicz, J. M., Aleven, V., Koedinger, K. R. (2023). Using latent variable models to make gaming-the-system detection robust to context variations. *User Modeling and User-Adapted Interaction (UMUAI)*. [[link](#)]

Thomas, D. R., Yang, X., Gupta, S., Adeniran, A., McLaughlin, E. A., & Koedinger, K. R. (2023). When the tutor becomes the student: Design and evaluation of efficient scenario-based lessons for tutors. In *LAK23: 13th International Learning Analytics and Knowledge Conference (LAK 2023), March 13-17, 2023, Arlington, TX, USA*. (pp. 250-261). ACM, New York, NY, USA, 12 pages. [32% acceptance rate] [[link](#)]

Chine, D. R., Brentley, C., Thomas-Browne, C., Richey, J. E., Gul, A., Carvalho, P. F., Branstetter, L., & Koedinger, K. R. (2022). Educational equity through combined human-AI personalization: A propensity matching evaluation. In *International Conference on Artificial Intelligence in Education: 23rd International Conference, AIED 2022, Durham, UK, July 27-31, 2022, Proceedings, Part I* (pp. 366-377). Cham: Springer International Publishing. [24% acceptance rate] [[link](#)]

Huang, Y., Dang, S., Richey, J. E., Asher, M., Lobczowski, N. G., **Chine, D. R.**, McLaughlin, E. A., Harackiewicz, J. M., Aleven, V., & Koedinger, K. R. (2022). Item response theory-based gaming detection. In *Proceedings of the 15th Inter.l Conference in Educational Data Mining*, 251-262. [[link](#)]

Chine, D. R. & Larwin, K. H. (2022). Using HLM to determine a STEM program's impact on middle school academic achievement. *International Journal of Research in Education and Science (IJRES)*, 8(1), 1017. [10% acceptance rate] [[link](#)]

Chine, D. R. & Larwin, K. H. (2022). The impact of STEM integration on student achievement using HLM: A case study. *Journal of Research in STEM Education*, 8(1), 1-23. [11% acceptance rate] [[link](#)]

Chine, D. (2007). Synthesis and characterization of $\text{TiN}_x\text{O}_y\text{F}_z$ compounds and studies of mixed metal N-F and N-O-F via x-ray powder diffraction and other analytical techniques [Thesis, Youngstown State University].

Jack, D., Zeller, M., & Wagner, T. R. (2004). Preparation and crystal structure of Ca_2NF . *Acta Crystallographica*. C60(i6-i8).

CONFERENCES & JOURNAL PUBLICATIONS (LIGHTLY REVIEWED)

Thomas, D. R., Gatz, E., Tipper, C., Gupta, S., & Koedinger, K. R. (2024, June). Using generative AI to provide feedback to adult tutors in training and assess real-life performance. In *The Learning Ideas Conference. 17th Annual Learning Ideas Conference. June 12-14, 2024. New York, NY*, Cham: Springer. [\[link\]](#)

Thomas, D. R., Gupta, S., Gatz, E., Tipper, C., & Koedinger, K. R. (2023, June). So you want to be a tutor? Professional development and scenario-based training for adult tutors. In *The Learning Ideas Conference. 16th Annual Learning Ideas Conference. June 14-16, 2023. New York, NY*, Cham: Springer. [\[link\]](#)

Chine, D. R., Chhabra, P., Adeniran, A., Kopko, J., Tipper, C., Gupta, S., & Koedinger, K. R. (2022, June). Scenario-based training and on-the-job support for equitable mentoring. In *The Learning Ideas Conference. 15th Annual Learning Ideas Conference. June 15-17, 2022. New York, NY*, Cham: Springer. [\[link\]](#) [\[video\]](#)

Chhabra, P., **Chine, D. R.,** Adeniran, A., Gupta, S., & Koedinger, K. R., (2022). An evaluation of perceptions regarding mentor competencies for technology-based personalized learning. In E. Langran (Ed.), *Proceedings of Society for Information Technology & Teacher Education International Conference* (pp. 1812-1817). San Diego, CA, United States: Association for the Advancement of Computing in Education (AACE). [\[link\]](#)

DISSERTATIONS & THESES

Chine, D. R. (2021). *A Pathway to Success? A Longitudinal Study Using Hierarchical Linear Modeling of Student and School Effects on Academic Achievement in a Middle School STEM Program*. [Doctoral dissertation, Youngstown State University]. OhioLINK Electronic Theses and Dissertations Center. [\[link\]](#)

BOOKS

Chine, D. R. (2022). *A Pathway to Success? A Longitudinal Study Using Hierarchical Linear Modeling of Student and School Effects on Academic Achievement in a Middle School STEM Program*. J. Johnson & A. Kaban (Eds.). ISTES Organization. [\[link\]](#)

WORKSHOPS ORGANIZED (PEER REVIEWED)

Thomas, D. R., Demszky, D., Koedinger, K. R., Marland, J., Peitzak, D., Reich, J., Slama, R., Toutziardi, A., & Kizilcec, R. F. (2025). Advancing the science of teaching with tutoring data: A collaborative workshop with the National Tutoring Observatory. In *Proceedings of the Twelfth ACM conference on Learning@Scale*. [\[link\]](#)

Aleven, V., Baraniuk, R., Brunskill, E., Crossley, S., Demszky, D., Fancsali, S., Gupta, S., Koedinger, K., Piech, C., Ritter, S., **Thomas, D. R.**, Woodhead, S., & Xing, W. (2023). Towards the future of AI-augmented human tutoring in math learning. In *Artificial Intelligence in Education. Posters and Late Breaking Results, Workshops and Tutorials, Industry and Innovation Tracks, Practitioners, Doctoral Consortium and Blue Sky: 24th International Conference, AIED 2023, Tokyo, Japan, July 3-7, 2023, Proceedings Part 2*. Cham: Springer. [\[link\]](#)

Thomas, D. R., Lin, J., & Koedinger, K. R. (eds.). (2023). Towards the future of AI-augmented tutoring in math learning. Proceedings of the *Workshop on International Conference of Artificial Intelligence in Education* co-located with the *24th International Conference on Artificial Intelligence in Education*, Tokyo, Japan, July 3-7, 2023. CEUR workshop proceedings. [\[link\]](#) [\[website\]](#)

WORKSHOP PAPERS (PEER REVIEWED)

Borchers, C., **Thomas, D. R.**, Lin, J., Abboud, R., & Koedinger, K. R. (2025). Augmenting human-annotated training data with large language model generation and distillation in open-response assessment. In the *Second International Workshop on Generative AI for Learning Analytics (GenAI-LA)* at *LAK25: 15th International Learning Analytics and Knowledge Conference (LAK 2025)*, March 3-8, 2024, Dublin, Ireland. [\[link\]](#)

Kakarla, S., Borchers, C., **Thomas, D. R.**, Bhushan, S., Koedinger, K. R. (2025). Comparing few-shot prompting of GPT-4 LLMs with BERT classifiers for open-response assessment in tutor equity training. In *Innovation and Responsibility for AI-supported Education at the 39th AAAI Annual Conference on AI, iRAISE 2025, Philadelphia, USA, March 3, 2025*. [\[link\]](#) [\[PMLR proceedings\]](#)

Kakarla, S., **Thomas, D. R.**, Lin, J., Gupta, S., & Koedinger, K. R. (2024). Using large language models to assess tutors' performance in reacting to students making math errors. In *AI for Education: Bridging Innovation and Responsibility at the 38th AAAI Annual Conference on AI, AAAI 2024, Vancouver, Canada, February 26-27, 2024*. [\[link\]](#)

Han, Z. F., Lin, J., **Thomas, D. R.**, Chen, E., Borchers, C., Gupta, S., & Koedinger, K. R. (2024). Improving assessment of tutoring practices using retrieval-augmented generation. In *AI for Education: Bridging Innovation and Responsibility at the 38th AAAI Annual Conference on AI, AAAI 2024, Vancouver, Canada, February 26-27, 2024*. [\[link\]](#)

Thomas, D. R., Aleven, V., Baraniuk, R., Brunskill, E., Crossley, S., Demszky, D., Fancsali, S., Gupta, S., Ritter, S., Woodhead, S., Xing, W., Koedinger, K. R., (2023). Summary of "Towards the Future of

AI-augmented Human Tutoring in Math Learning.” In *Conference on Artificial Intelligence in Education: 24th International Conference, AIED 2023, Tokyo, Japan, July 3-7, 2023*. CEUR workshop proceedings. [\[link\]](#)

Lin, J., **Thomas D. R.**, Han F., Gupta, S., Tan, W., Nguyen N., & Koedinger, K. R. (2023). Using large language models to provide explanatory feedback to human tutors. In *Conference on Artificial Intelligence in Education: 24th International Conference, AIED 2023, Tokyo, Japan, July 3-7, 2023*, CEUR workshop proceedings. [\[link\]](#)

Hirunyasiri, D., **Thomas, D. R.**, Lin, J., Koedinger, K. R., & Aleven, V. (2023) Comparative analysis of GPT-4 and human graders in evaluating praise given to students in synthetic dialogues. In *Conference on Artificial Intelligence in Education: 24th International Conference, AIED 2023, Tokyo, Japan, July 3-7, 2023*. CEUR workshop proceedings [\[link\]](#)

POSTERS (REVIEWED)

Thomas, D. R., Borchers, C., Lin, J., Kakarla, S., Bhushan, S., Gatz, E., Gupta, S., Abboud, R., & Koedinger, K. R. (2025). Leveraging LLMs to assess tutor moves in real-life dialogues: A feasibility study. In *European Conference on Technology-Enhanced Learning (ECT-EL)*. Cham: Springer Nature Switzerland.[\[link\]](#).

Thomas, D. R., Gupta, S., & Koedinger, K. R. (2023). Comparative analysis of learnersourced human-graded and AI-generated responses for autograding online tutor lessons. In *International Conference on Artificial Intelligence in Education: 24th International Conference, AIED 2023, Tokyo, Japan, July 3-7, 2023, Proceedings Part 2*. Cham: Springer. [\[link\]](#) [\[poster\]](#)

DEMONSTRATIONS (REVIEWED)

Kakarla, S., Gaddam, R., **Thomas, D. R.**, Lin, J., Gatz, E., Gupta, S., & Koedinger, K. R. (2024). Personalized learning squared (PLUS): Implementation of LLM-facilitated assessment of tutors’ performance in reacting to students making errors. In *International Conference on Artificial Intelligence in Education: 25th International Conference, AIED 2024, Recife, Brazil, July 8-12, 2024, Proceedings Part 2*. [\[link\]](#)

Lin, J., **Thomas, D. R.**, Han, Z., Tan, W., Nguyen, N. D., Gupta, S., Gatz, E., Tipper, C., & Koedinger, K. R. (2023). Personalized learning squared (PLUS): Doubling math learning through AI-assisted tutoring. In *International Conference on Artificial Intelligence in Education: 24th International Conference, AIED 2023, Tokyo, Japan, July 3-7, 2023, Proceedings Part 2*. Cham: Springer. [Best Demo Award] [\[link\]](#) [\[video\]](#)

Chine, D. R., Chhabra, P., Adeniran, A., Gupta, S., & Koedinger, K. R. (2022, June). Development of scenario-based mentor lessons: An iterative design process for training at scale. In *Proceedings of the Ninth ACM Conference on Learning@Scale, New York City, NY, June 1-3, 2022*. 469-471. [\[link\]](#)

UNDER REVIEW

Thomas, D. R., Borchers, C., Lin, J., Gatz, E., Gupta, S., & Koedinger, K. R. (2025). Evidence for unidimensionality of tutoring skills. *Under review*.

Thomas, D. R., Xiao, R., McLaughlin, M. A., & Koedinger, K. R. (2025). Using contrastive examples to improve learning and LLMs to scale assessment. *Under review*.

Thomas, D. R., Kakarla, S., Lin, J., Abboud, R., & Koedinger, K. R., (2025). Generative AI evaluation of human tutors: Demonstrations and considerations for prompt engineering. *Under review*.

OTHER PUBLICATIONS, NEWS, AND MEDIA

AI + Human Tutors = A New Equation for Math Success. (June 2025). *The Learning Shift*. NBC News. <https://www.youtube.com/watch?v=UGoYioREH0E>.
<https://www.snapchat.com/p/8bb879c7-45c0-499c-bb3c-7a3d0e229301/574358581747712>.

Fischer, K. (March 2025). *Five questions with the developers of PLUS: Personalized Learning Squared*. The Learning Agency. Interview with Danielle Thomas.
<https://the-learning-agency.com/the-cutting-ed/article/five-questions-with-the-developers-of-plus-personalized-learning-squared/>.

Thomas, D. R., Tipper, C., Gupta, S., Kopko, J., Cheng, H., & Lawson, J. (2023). The time's come: Proof-of-concept study discussing linguistic-cognitive influences supporting the deletion of the letter "A." *The Association of Computational Heresy. SIGBOVIK 2023*. [\[link\]](#)

COURSES TAUGHT

School Contexts and Community Involvement (5170:604)

Summer 2022

University of Akron, Akron, OH

Graduate course focusing on building support-based relationships with the community and effective school operations in fulfillment for the MS in Educational Leadership and principal license.

Human Resources Management (5170:603)

Spring 2022

University of Akron, Akron, OH

Graduate course requiring application of major dimensions of personnel function in public education (e.g., staff PD, recruitment, hiring, teacher evaluation, collective bargaining, negotiations, employee misconduct, etc.) in fulfillment for the MS in Educational Leadership and principal license.

Management of Physical Resources (5170:602)

Fall 2021

University of Akron, Akron, OH

Graduate course discussing educational reform, public education law, facilities management, and technology advances to improve learning conditions in fulfillment for the MS in Educational Leadership and principal license.

Organizational Leadership (5170:601)**Summer 2021**

University of Akron, Akron, OH

Graduate course reviewing perspectives on leadership and administration with emphasis on processes, tasks, and relationships in fulfillment of the MS in Educational Leadership and principal license.

Physical Chemistry Labs I/II (3739/3740)**2004-2007**

Youngstown State University, Youngstown, OH

Undergraduate courses teaching principles and applications of thermodynamics, kinetics, quantum mechanics, and statistical thermodynamics intended for chemistry and chemical engineering students.

General Chemistry I/II & Labs (1515/1516)**2004-2007**

Youngstown State University, Youngstown, OH

Undergraduate courses teaching principles of chemistry, measurement, stoichiometry, periodic properties, acids/bases, thermodynamics, and kinetics intended for science and engineering students.

INVITED TALKS & PANELS

Guest Lecturer (*virtual*)**Mar. 2025**

Carnegie Mellon University

Learning about Learning Course—Instructor Erin Gatz, PhD.

Computer-assisted Collaborative Learning—March 17, 2025Guest Lecturer (*virtual*)**Oct. 2024**

Carnegie Mellon University

Special Topics Course: Augmenting Human Intelligence—Asst. Prof. Ken Holstein

*Using Generative AI to Assess and Provide Feedback to Tutors in Training and Evaluate**Real-life Performance*—October 2, 2024Panelist (*in-person*)**July 2024**

“Do we need AIED if we have powerful generative AI?”

*International Conference on Artificial Intelligence in Education (AIED 2024)**Recife, Brazil, July 11, 2024*Invited Speaker (*virtual*)**April 2024**

“Quasi-Experimental Methods in Practice”

JPAL *Design within Reach* Session—April 11, 2024Guest Speaker (*virtual*)**Oct. 2023**

CMU LearnLab Seminar Series

“A meta-analytic investigation of the impact of middle school STEM education: Where are all the students of color?” October 16, 2023 [\[video\]](#)

Panel Moderator (*in-person*)**July 2023**

“Towards the Future of AI-augmented Human Tutoring in Math Learning” — Tokyo, Japan

Workshop in *International Conference on Artificial Intelligence in Education: 24th International*

Conference, AIED 2023, Tokyo, Japan, July 3, 2023

Invited Speaker & Panelist (in-person) Apr. 2023
“The Future of Tech in Tutoring” — Arlington, Virginia
Charting the Path Forward for Tutoring Based on Evidence and Practice
Accelerate – Community of Practice

PRESENTATIONS & PROVIDED TRAININGS

Using Generative AI to Provide Feedback to Adult Tutors in Training and Assess Real-life Performance — *in-person* June 2024
17th Annual *The Learning Ideas Conference*, NYC June 12-14, 2024

Design Within Reach: Quasi-experimental Methods in Practice May 2024
Hosted by J-PAL North America for the Learning Engineering Virtual Institute

So You Want to Be a Tutor? PD and Scenario-based Training for Adult Tutors June 2023
16th Annual *The Learning Ideas Conference*, NYC June 14-16, 2023

Using AI-Powered Personalized Learning to Close K-12 Math Learning Opportunity Gaps in the United States and Beyond: New Tools, New Evidence Nov. 2022
Fall Research Conference, *Association for Public Policy Analysis & Management (APPAM)*, Washington D.C., Nov. 16-19, 2022

Building Relationships Nov. 2022
PLUS live tutor training session — *virtual*

Establishing Norms & Expectations Nov. 2022
PLUS live tutor training session — *virtual*

Breaking the Ice Nov. 2022
PLUS live tutor training session — *virtual*

Bringing Math Tutoring to All Students: Using Human Tutors and Artificial Intelligence to Bridge the Opportunity Gap Aug. 2022
Educational Service Center of Eastern Ohio, August 12, 2022

Scenario-based Training and On-the-Job Support for Equitable Mentoring June 2022
15th Annual *The Learning Ideas Conference*, NY June 15-17, 2022

Supporting Mentoring and Math Instruction with AI Software Apr. 2022
Pennsylvania Statewide STEM Ecosystem (PSSE) Working Group

Human-Computer Tutoring Systems, Motivational Interventions, And Efforts to Closing the Gap Jan. 2022
Human-Computer Interaction Institute, Carnegie Mellon University

Strategies for Effective Tutoring & How PL² Supports Them Homewood Children's Village — Pittsburgh, PA	Jan. 2022
Student Engagement & Motivation Strategies Using PL² Homewood Children's Village — Pittsburgh, PA	Nov. 2021
Introduction to Teaching Math Using PL² Homewood Children's Village — Pittsburgh, PA	Sept. 2021

ACADEMIC SERVICE & REVIEW

<i>European Conference on Technology Enhanced Learning (EC-TEL)</i>	2025 - present
<i>International Journal of Artificial Intelligence in Education (IJAIED)</i>	2024 - present
<i>Learning @ Scale Conference (L@S)</i>	2024 - present
<i>European Journal of STEM Education</i>	2024 - present
<i>International Learning Analytics and Knowledge Conference (LAK)</i>	2024 - present
<i>International Journal of Human-Computer Interaction</i>	2023 - present
<i>Artificial Intelligence in Education Conference (AIED)</i>	2023 - present
<i>International Journal of STEM Education</i>	2022 - present
<i>International Society of Learning Sciences (ISLS)</i>	2021 - present

ACADEMIC HONORS & AWARDS

Tools Competition Phase 2 Awardee <i>TeachPLUS—An AI-powered teacher training platform</i>	2025
International E-learning Award (iela) Personalized Learning Squared Gold ribbon in Performance Support Experience- Business Division	2022
Dr. Kim J. Rost Memorial Award Youngstown State University	2020
Cushwa Commercial Shearing Graduate Fellowship Award Recipient of full graduate scholarship	2007
American Chemistry Society Award For excellence in chemistry	2005
Hypercube Scholars Award For excellence in mathematics	2004
Scudders Physical Chemistry Award For excellence in physical chemistry	2004

AFFILIATIONS & POSITIONS

Triple P (Positive Parenting Program) Accredited educator provider	2020-2022
STEM Ambassadors and Junior STEM Student-to-student mentoring programs Founder	2012-2019
Camp Invention (K- gr. 5) and Invention Project (gr. 6-8) National Inventors Hall of Fame, Akron, OH STEM summer programs Director	2017-2019
Success by Six United Way of Youngstown and Mahoning Valley Pre-kindergarten summer readiness program Administrator	2018-2019
VEX Robotics (grades 9-12) Coach	2017-2019
First Lego League Robotics (grades 4-8) Coach	2015-2018
Soap Box Derby (grades 7-8) All American STEM Gravity Racing Challenge Derby Downs, Akron, OH Coach (student attended World Competition)	2012-2017
Austintown Junior Women's League Webmaster and Member	2016-2019

DISSERTATION COMMITTEES SERVED

Christopher Roberts- EdD. Educational Leadership, Youngstown State University	Winter 2024
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INDEPENDENT STUDY ADVISEES

Angela Xuan- Masters HCI	Spring 2025
Esheta Garg- Masters HCI	Spring 2025
Yiyang Zhang- Masters HCI	Spring 2025
Hanyu Jiang- Masters HCI	Fall 2024

Sophie Hao- Master HCI	Fall 2024
Lori Chen- Masters HCI	Spring 2024
Tianyang Chen- Masters HCI	Spring 2024
Cassie Xu- Masters HCI	Spring 2024
Zhiyuan Chen- Masters HCI	Spring 2024
Kaitlyn Ng- Undergraduate HCI	Spring 2024
Yiwei Wang- METALS	Spring 2024
Yimei Chen- METALS	Spring 2024
Lisa Yu Li- Masters HCI	Fall 2023
Laura Delince Ceballos- Masters Design	Fall 2023

RESEARCH ASSISTANT ADVISEES

Isha Raghuvanshi- Masters in Product and Service Design	Winter 2024 - present
Shambhavi Bhushan- Masters in Public Policy & Management	Spring 2024 - present
Pranaya Murugan- Data Science	Jan. 2025 - present
Chloe Qianhui Zhao- METALS	Jan. 2025 - present
Sophie Golunova- Master in Information Security Policy & Management	Spring 2024
Ryan Lin- Masters in Statistics and Machine Learning	Spring 2024
Alexander Du- Bachelors in Statistics & Data Science	Spring 2024
Yinyu Yang- METALS	Spring 2022

FACULTY ADVISING

Arush Khare- Summer Undergraduate Research Apprenticeship (SURA)	Summer 2025
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