Ryan Shaun Baker
(formerly Ryan S.J.d. Baker)

Graduate School of Education
University of Pennsylvania
Philadelphia, PA USA
ryanshaunbaker@gmail.com
http://www.upenn.edu/learninganalytics/ryanbaker/
CV May 29, 2025

RESEARCH INTERESTS

Educational Data Mining, Learning Analytics, Quantitative Ethnography, Generative Artificial Intelligence and Education, Algorithmic Bias, Learning Engineering, Student Modeling (Disengagement, Affect, Knowledge, Self-Regulated Learning, Meta-Cognition), Longitudinal Success, Prediction Modeling, Hybrid Human-AI Qualitative Research, Data-Driven Classroom Interviewing

EDUCATION

ScB. Computer Science. Brown University. Graduated with Honors in Computer Science, May 2000.

M.S. Human-Computer Interaction. Carnegie Mellon University. Conferred August 9, 2005.

Ph. D. Human-Computer Interaction. Carnegie Mellon University. Conferred on December 22, 2005. Advisors: Kenneth R. Koedinger, Albert T. Corbett

Executive Education. Innovation and Entrepreneurship at Columbia Business School (IE@Columbia). Spring 2016.

CURRENT APPOINTMENT

Professor. Graduate School of Education. University of Pennsylvania. Summer 2022- present. Also Director of Penn Center for Learning Analytics. Secondary appointment in Computer and Information Science.

OTHER CURRENT POSITIONS

Faculty Director. Masters in Learning Analytics, University of Pennsylvania. 2022-Present.

Associate Editor. *Journal of Educational Data Mining*. 2008-Present.

Adjunct Professor. Education Futures, University of South Australia. 2024-2025.

Distinguished Associated Faculty (Honorary). Department of Computer Science, Ashoka University. 2022-Present.

Honorary Fellow. University of Edinburgh Moray House School of Education and Sport. 2016-Present.

Research Fellow. LINK Lab, University of Texas at Arlington. 2017-2022.

PRIOR PROFESSIONAL EXPERIENCE

Associate Professor. Graduate School of Education. University of Pennsylvania. Summer 2016- Summer 2022.

Honorary Adjunct Associate Professor. Department of Human Development. Teachers College, Columbia University. 2016-2021.

Affiliate Assistant Professor. Department of Social Science and Policy Studies. Worcester Polytechnic Institute. Fall 2013-2017.

Associate Professor. Department of Human Development. Teachers College, Columbia University. Fall 2013-Summer 2016. Also **Program Coordinator** of MS in Learning Analytics.

Julius and Rosa Sachs Distinguished Lecturer. Teachers College, Columbia University. Fall 2012- Summer 2013.

Assistant Professor of Psychology and Learning Science. Department of Social Science and Policy Studies. Courtesy Appointment in Computer Science. Worcester Polytechnic Institute. Fall 2009 – Fall 2012.

Technical Director. Pittsburgh Science of Learning Center DataShop. Carnegie Mellon University. Fall 2008 – Summer 2009.

Post Doctoral Fellow. Human-Computer Interaction Institute/Pittsburgh Science of Learning Center. Carnegie Mellon University. Summer 2007 - Summer 2009. Mentor: Vincent Aleven

Research Fellow. Learning Sciences Research Institute. University of Nottingham. Spring 2006 – Spring 2007. Mentor: Shaaron Ainsworth.

Post Doctoral Fellow. Human-Computer Interaction Institute. Carnegie Mellon University. Winter 2006.

Graduate Research Assistant/ Graduate Fellow. Human-Computer Interaction Institute. Carnegie Mellon University. Advisors: Kenneth R. Koedinger, Albert T. Corbett. Fall 2000 – Fall 2005.

Undergraduate Research Assistant. JDSL (Data Structures Library in JAVA) Project. Computer Science Department. Brown University. Advisor: Roberto Tamassia. Summer 1997 – Spring 2000.

Research Assistant. LARC (LAboratory for Recreational Computing) Games Lab. Computer Science Department. University of North Texas. Advisor: Ian Parberry. Summer 1995– Spring 1996.

Educational Software Developer. Office of Education. Superconducting Super Collider Laboratory. Managers: Sam Kivlighn, Tom Gadsden. Summer 1992– Spring 1994.

AWARDS

Best Senior Reviewer Award. Journal of Learning Analytics, 2025.

Prof. Ram Kumar Educational Data Mining Test of Time Award. International Educational Data Mining Society, 2024. For work with Sujith Gowda, Naomi Wixon, Jessica Kalka, Angela Wagner, Aatish Salvi, Vincent Aleven, Gail Kusbit, Jaclyn Ocumpaugh, and Lisa Rossi.

Best Short Paper Award. 16th International Conference on Educational Data Mining, 2023.

Best Paper Award. 22nd International Conference on Artificial Intelligence in Education, 2021.

Honorable Mention. MIDAS Reproducibility Challenge. Michigan Institute for Data Science, 2020. For work with Christopher Brooks and Josh Gardner.

Prof. Ram Kumar Educational Data Mining Test of Time Award. International Educational Data Mining Society, 2020. For work with Kalina Yacef.

Best Paper Award. 9th International Conference on Learning Analytics and Knowledge, 2019.

Educational Research Award. Council of Scientific Society Presidents. 2018.

Best Student Paper Award (as co-author with Anthony Botelho). 11th International Conference on Educational Data Mining, 2018.

Best Student Paper Award (as co-author with Yang Jiang). 19th International Conference on Artificial Intelligence in Education, 2018.

Best Paper Award. 24th Conference on User Modeling, Adaptation, and Personalization, 2016.

Best Student Paper Award (as co-author with Shimin Kai). 8th International Conference on Educational Data Mining, 2015.

Best Paper Award. 17th International Conference on Artificial Intelligence in Education, 2015.

Best Technical Paper Award. 5th International Conference on Learning Analytics, 2015.

Attendee Choice Award for Most Original Research. 10th Annual Games+Learning+Society Conference Poster Session, 2014.

Best Paper Award. 11th International Conference on Intelligent Tutoring Systems, 2012.

James Chen Best Student Paper Award (as co-author with Michael Sao Pedro). 20th International Conference on User Modeling, Adaptation, and Personalization, 2012.

AERA SIG-ATL Best Student Paper Award (as co-author with Michael Sao Pedro). Annual Meeting of the American Educational Research Association, 2012.

Nomination for Teaching Award. Romeo L. Moruzzi Young Faculty Award for Innovation in Undergraduate Education, Worcester Polytechnic Institute. 2011.

People's Choice Award for Best Oral Presentation. 10th International Conference on Intelligent Tutoring Systems, 2010.

People's Choice Award for Best Interactive Event. 10th International Conference on Intelligent Tutoring Systems, 2010.

Best Paper Award. 8th International Conference on Intelligent Tutoring Systems, 2006.

Senior Prize in Computer Science. Brown University, 2000.

GRANTS, PROJECT AWARDS, AND FELLOWSHIPS

Institute of Education Sciences. The Using Generative AI for Reading R&D Center (U-GAIN Reading). 2024-2029. Roschelle, J. (PI). Baker, R.S. (Co-PI). $9,999,825. Award #R305C240040.

Institute of Education Sciences. Examining the Relationship between Individual Characteristics and Self-Regulated Learning Across Multiple OpenStax Courses. 2024-2026. Baker, R.S. (PI) $916,771. Award #R305N240049.

National Science Foundation. Collaborative Research: Data-Driven Interviewing to Study the Embodied Cognitive Shifts that Occur During Geometry Learning. 2024-2027. Baker, R.S. (PI) $222,548. (collaborative award across three institutions -- total $763,407). Award #BCS-2341411.

National Science Foundation. Using Artificial Intelligence to Personalize Mathematics Instruction to Students Interests. 2024-2028. Walkington, C. (PI). Baker, R.S. (Co-PI). $1,296,683. Penn subcontract $97,351. Award #DRL-2341948.

National Science Foundation. Mid-scale RI-2: SafeInsights: A National Research Infrastructure for Large-Scale Learning Science and Engineering. 2024-2029. Baraniuk, R. (PI). Baker, R.S. (Subcontract lead). $89,929,970. Penn subcontract $898,294. Award #DUE-2153481.

Bill and Melinda Gates Foundation. A Dataset for Developing More Accurate Generalizable and Equitable Mind Wandering Detection Algorithms and Supporting Research. 2023-2025. Mills, C. (PI), Baker, R.S. (Subcontract lead). $300,000.

AERDF. CueThinkEF+ with Pennesota. 2023-2025. Baker, R.S. (Subcontract lead). $900,000. Penn subcontract $200,000.

National Science Foundation. Learning Analytics in STEM Ed Research: Broadening Education in Advanced Methods. 2023-2026. Baker, R.S. (PI). $499,918 (collaborative award with North Carolina State University – total $1.0M). Award #DRL-2321129.

National Science Foundation. Collaborative Research: CueLearn: Enhancing Social Problem Solving through Intelligent Support. 2023-2026. Baker, R.S. (PI). $600,032. (collaborative award with three other institutions – total $2.5M). Award# DRL-2300829.

National Science Foundation. Advancing the science of STEM interest development with machine learning and data-driven interviews. 2023-2026. Ocumpaugh, J. (PI), Baker, R.S. (Co-PI). $468,412. (collaborative award with University of Illinois – total $1.5M). Award# DRL-2301173.

Learning Engineering Virtual Institute. LEVI Engagement Hub. 2023-2025. Mills, C. (PI), Baker, R.S. (Co-PI). $1,500,000.

U.S. Department of Education, Institute of Education Sciences. Data Science Methods for Digital Learning Platforms Training Program. Award #R305B230007. July 2023 – June 2026. Baker, R.S. (PI). $795,312.

New Venture Fund. RPPL Research Infrastructure for Professional Development: Year One. Baker (PI), 2023-2025. $311,581.

Schmidt Futures. A dataset for developing more accurate, generalizable, and equitable mind wandering detection algorithms and supporting research. Mills, C. (PI), Baker, R.S. (Co-PI). 2022.

National Institutes of Health, National Institute of Neurological Disorders and Stroke. Grassroots Rigor: making rigorous research practices accessible, meaningful, and building a community around them. Kording, K.P. (PI), Baker, R.S. (Senior Personnel). August 2022-July 2028. $3,588,039. Project Number 1UC2NS128361-01.

National Science Foundation, Convergence Accelerator Phase 1. Transforming Educational Technology Through Convergence. Baker, R.S. (PI). September 2022-February 2023. $99,953. Award #ITE-2231524.

National Science Foundation, EHR Core Research (ECR). Collaborative Research: Investigating Gender Differences in Digital Learning Games with Educational Data Mining. Baker, R.S. (PI). July 2022-April 2025. $213,887. (collaborative award with four other institutions – total $1.5M). Award #DRL-2201798.

National Science Foundation, Improving Undergraduate STEM Education (IUSE). Grappling with Graphs: New Tools for Improving Graphing Practices of Undergraduate Biology Students. Gardner, S. (PI), Baker, R.S. (Co-PI). August 2021 – July 2026. $1,566,948. Baker, R.S. (subcontract lead). August 2021 – July 2025. $222,451.

Schmidt Futures. Instrumenting the RealizeIt Platform. Kizilcec, R. (PI), Baker, R.S. (Co-PI). March 2021 – February 2023. $215,000 (total grant across institutions $500,000).

National Science Foundation, EHR Core Research (ECR). Collaborative Research: Exploring Algorithmic Fairness and Potential Bias in K-12 Mathematics Adaptive Learning. Ocumpaugh, J. (PI), Baker, R.S. (Co-PI). October 2020 – September 2024. $512,985. (collaborative award with one other institution – total $1.5M). Award #DUE-2000405.

New Schools Venture Fund, EF+Math Program. Making learning visible: scalable, multi-system detection of self-regulation related to EF. Baker, R.S. (PI). April 2020 – September 2023. $899,702.

National Science Foundation, Improving Undergraduate STEM Education. Understanding and Enhancing Self-Regulated Learning in Introductory Computer Science Courses. Fouh, E.M. (PI), Baker, R.S. (Co-PI). December 2019-November 2022. $300,000. Award #DUE-1946150.

National Science Foundation, Cyberinfrastructure for Sustained Scientific Innovation. Collaborative Research: Frameworks: Cyber Infrastructure for Shared Algorithmic and Experimental Research in Online Learning. October 1, 2019 – September 30, 2025. $1,399,995. (collaborative award with one other institution – total $3.3M). Award #DRL-1931419.

Schmidt Futures. Customizing a Digital Learning Platform for Rapid, Low-Cost Research. Baker, R.S. (subcontract lead). August 14, 2019 – July 31, 2022. $100,000.

National Science Foundation, Discovery Research PreK-12. Collaborative Research: Developing an Online Game to Teach Middle School Students Science Research Practices in the Life Sciences. Baker, R.S. (PI). September 2019-December 2025. $447,009 (collaborative award with two other institutions – total $3.0M). Award #DRL-1907437.

National Science Foundation, Cyberlearning. Collaborative Research: Student Affect Detection and Intervention with Teachers in the Loop. Baker, R.S. (PI). September 2019-August 2024. $235,513 (total grant across institutions $730,437). Award #IIS-1917545.

Office of Naval Research. Toward Learning Analytics on US Navy Training Data. Baker, R.S. (PI). September 2017-August 2018. $99,972. Award #N0014-17-1-2662.

National Science Foundation, Discovery Research PreK-12. Collaborative Research: Using Educational Data Mining Techniques to Uncover How and Why Students Learn from Erroneous Examples. Baker, R.S. (PI). June 2017-December 2022. $584,644 (total grant across institutions $1,498,736). Award #DRL-1661121.

U.S. Department of Education, Institute of Education Sciences. Using Automating Detectors of Engagement to Identify Malleable Factors in Blended Learning Environments. Heppen, J. (PI), Baker, R.S. (Co-PI). July 2017-June 2021. $1,399,999. Award #R305A170167. Subcontract to UPenn: Using Automating Detectors of Engagement to Identify Malleable Factors in Blended Learning Environments. Baker, R.S. (subcontract lead). July 2017-June 2021. $390,157.

U.S. Department of Education, Institute of Education Sciences.
Exploring Adaptive Cognitive and Affective Learning Support For Next-Generation STEM Learning Games. Shute, V. (PI), Baker, R.S. (Co-PI). July 2017-June 2021. $1,399,996. Award #R305A170376. Subcontract to UPenn: Exploring adaptive cognitive and affective learning support for next-generation STEM learning games. Baker, R.S. (subcontract lead). July 2017-June 2021. $429,826.

National Science Foundation, Cyberlearning and Future Learning Technologies. EXP: Linguistic Analysis and a Hybrid Human-Automatic Coach for Improving Math Identity. Ocumpaugh, J.L. (PI), Baker, R. S. (Co-PI) 2016-2020. $540,047. Award #DRL-1739012.

National Science Foundation, Big Data Regional Innovation Hubs. BD Spokes: Spoke:

NORTHEAST: Collaborative: Grand Challenges for Data-Driven Education. Baker, R. S. (PI) 2016-2019. $224,999. (Total grant across 3 institutions $979,097). Award #DRL-1661987.

National Science Foundation, EHR Core Research. Collaborative Research: Using Data Mining and Observation to derive an enhanced theory of SRL in Science learning environments. Baker, R. S. (PI) 2016-2021. $1,492,122. Award #DRL-1561567.

U.S. Army Research Laboratory. Integrating edX, GIFT, and CTAT. Aleven, V. (PI), Baker, R.S. (Co-PI). 2016-2019. $650,757.

Classba, Inc. Classba Research Lab on Adaptive Learning at Teachers College, Columbia University. Baker, R.S. (PI) 2015-2016. $108,851.

National Science Foundation, EHR Core Research. Collaborative Research: The Downside of Perseverance – Investigating and Moving Students Beyond Unproductive Persistence. Schechtman, N. (PI). Baker, R.S. (TC PI). 2015-2019. $399,411. (Total grant across 3 institutions $1,516,281). Award #DRL-1535340.

Bill and Melinda Gates Foundation. Digital Learning Research Network. Siemens, G. (PI). Baker, R. (Project member). 2015-2016. $1,600,000.
    Subcontract to TC: Digital Learning Research Network. Baker, R.S. (subcontract lead). 2015-2016. $206,000.

National Science Foundation, Data Intensive Research to Improve Teaching and Learning – An Ideas Lab to Foster Transformative Approaches to Teaching and Learning. Collaborative Research: Modeling Social Interaction and Performance in STEM Learning. Bergner, Y. (PI). Baker, R.S. (Co-PI). 2014-2017. $774,447. Award #DRL-1418378.
    Subcontract to TC: Collaborative Research: Modeling Social Interaction and Performance in STEM Learning. Baker, R.S. (subcontract lead). 2014-2017. $185,320.

Bill and Melinda Gates Foundation (via Athabasca University). MOOC Learner Motivation and Course Completion Rates. Wang, Y.E. (PI), Baker, R.S.J.d. (Co-PI). 2013-2014. $15,000.

National Science Foundation, Research on Education and Learning (REAL). Making Math Tutors More Engaging and Effective through Interaction Design Patterns and Educational Data Mining. Baker, R.S.J.d. (PI). September 2013 – August 2017. $1,480,949. Award #DRL-1252297.

U.S. Army Research Laboratory. Detection and Transition Analysis of Engagement and Affect in a Simulation-Based Combat Medic Training Environment. Baker, R.S.J.d. (PI). 2012-2015. $958,093. Award #W911NF-13-2-0008.

Bill and Melinda Gates Foundation, US Programs, Log File and Valence Studies of Education. Modeling how Affect, Engagement, and Conscientiousness Interact and Influence Learning in Newton's Playground. Baker, R.S.J.d. (PI). 2012-2014. $673,378. Award #OPP1060038.

U.S. Department of Education, Institute of Education Sciences. The Development of a Pedagogical Agent for Physical Science Inquiry Driven by Educational Data Mining. Gobert, J.G. (PI), Baker, R.S.J.d. (Co-PI). July 2012-June 2015. $1,499,772. Award #R305A120778.

Subcontract to TC: The Development of a Pedagogical Agent for Physical Science Inquiry Driven by Educational Data Mining. Baker, R.S.J.d. (subcontract lead). July 2012-June 2015. $304,679.

Bill and Melinda Gates Foundation, US Program, Vital Behaviors and Skills Associated with Engagement Derived from Learning Analytics Topic. Towards an Engagement Pedometer for Everyone: Unobtrusive Assessment of Engagement and Disengagement. Baker, R.S.J.d. (PI). 2011-2013. $277,044. Award #OPP1048577.

National Science Foundation, Software and Hardware Foundations (SHF). SHF: Small: User Studies to Improve Novice Programming. Fisler, K. (PI), Baker, R.S.J.d. (Co-PI). 2011-2014. $261,561. Award #CCF-1116539. REU Supplement $16,000.

U.S. Department of Education, Institute of Education Sciences. Classroom Environment, Allocation of Attention, and Learning Outcomes in K-4 Students. Fisher, A. (PI), Baker, R.S.J.d. (Co-PI). 2011-2015. $1,571,973. Award #R305A110444.
> **Subcontract to WPI:** Classroom Environment, Allocation of Attention, and Learning Outcomes in K-4 Students. Baker, R.S.J.d. (subcontract lead). 2011-2015. $ 326,099. ($66,211 spent before transfer to TC)
> **Subcontract to TC:** Classroom Environment, Allocation of Attention, and Learning Outcomes in K-4 Students. Baker, R.S.J.d. (subcontract lead). 2011-2015. $ 259,888.

National Science Foundation, Innovative Technology Experiences for Students and Teachers (ITEST). Research: Predicting STEM Career Choice from Computational Indicators of Student Engagement within Middle School Mathematics Classes. Baker, R.S.J.d. (PI), Heffernan, N.T. (Co-PI). June 2011 – May 2016. $711,609. Award #DRL-1031398.
> **Subcontract to TC:** Research: Predicting STEM Career Choice from Computational Indicators of Student Engagement within Middle School Mathematics Classes. Baker, R.S.J.d. (PI). 2012-2014. $366,210.

National Science Foundation, Research and Evaluation on Education in Science and Engineering (REESE). Empirical Research: Emerging Research: Using Automated Detectors to Examine the Relationships Between Learner Attributes and Behaviors During Inquiry in Science Microworlds. Gobert, J.G. (PI), Baker, R.S.J.d. (Co-PI). October 2010 – September 2015. $986,111. Award #DRL-1008649.
> **Subcontract to TC:** Empirical Research: Emerging Research: Using Automated Detectors to Examine the Relationships Between Learner Attributes and Behaviors During Inquiry in Science Microworlds. Baker, R.S.J.d. (subcontract lead). 2012-2013. $79, 566.

National Science Foundation, Research and Evaluation on Education in Science and Engineering (REESE). Empirical Research: Emerging Research: Robust and Efficient Learning: Modeling and Remediating Students' Domain Knowledge. Corbett, A.T. (PI), Baker, R.S.J.d. (Co-PI). July 2009 – June 2013. $1,066,102. Award # DRL-0910188.
> **Subcontract to WPI:** Empirical Research: Emerging Research: Robust and Efficient Learning: Modeling and Remediating Students' Domain Knowledge. Baker, R.S.J.d. (subcontract lead). 2009-2012. $161,781.

U.S. Department of Education, Institute of Education Sciences. Promoting Robust Understanding of Genetics with a Cognitive Tutor that Integrates Conceptual Learning with

Problem Solving. Corbett, A.T. (PI), Baker, R.S.J.d. (Co-PI). 2009-2013. $1,422,468. Award # R305A090549.

> **Subcontract to WPI:** Promoting Robust Understanding of Genetics with a Cognitive Tutor that Integrates Conceptual Learning with Problem Solving. Baker, R.S.J.d. (subcontract lead). 2009-2012. $265,957.

National Science Foundation, Science of Learning Centers. Toward a Decade of PSLC Research: Investigating Instructional, Social, and Learner Factors in Robust Learning through Data-Driven Analysis and Modeling. Koedinger, K.R. (PI). Baker, R.S.J.d. (Senior Personnel). February 2010- January 2015. $25,000,000. Award # SBE-0836012.

> **Subcontract to WPI:** PSLC Projects in Affect Detection and Closing the Loop on Gaming the System. Baker, R.S.J.d. (subcontract lead). 2010-2012. $316,960.
> **Subcontract to TC:** PSLC Projects in Affect, Gaming the System, and Robust Learning. Baker, R.S.J.d. (subcontract lead). 2012-2013. $144,096.

Pittsburgh Science of Learning Center Project Award. Improving Student Affect Through Adding Gaming Elements to Mathematics LearnLabs. Aleven, V. (PI). Baker, R.S.J.d. (co-PI). August 2008 - September 2009. $104,901.

Pittsburgh Science of Learning Center Project Award. Geometry Greatest Hits. Aleven, V (PI). Baker, R.S.J.d. (co-PI). August 2008 - September 2009. $101,861.

Pittsburgh Science of Learning Center Project Award. How Content and Interface Features Influence Student Choices Within the Learning Space. Baker, R.S.J.d. (PI). July 2007 - July 2008. $73,718.

Kaleidoscope Initiative. A Centralized Research Data Repository. Melis, E. (PI), Baker, R. (co-PI). March-December 2007. €15,000.

National Defense Science and Engineering Graduate Fellowship. American Society of Engineering Education/Department of Defense. Fall 2001- Spring 2004.

COURSES TAUGHT

Big Data, Education, and Society. Graduate School of Education, University of Pennsylvania.
> Spring 2025. (two sections)

Core Methods in Educational Data Mining. Graduate School of Education, University of Pennsylvania.
> Fall 2024.

Adaptive Learning Systems. Graduate School of Education, University of Pennsylvania.
> Summer 2024.

Big Data, Education, and Society. Graduate School of Education, University of Pennsylvania.
> Spring 2024. (two sections)

Core Methods in Educational Data Mining. Graduate School of Education, University of Pennsylvania.
Fall 2023. (two sections)

Core Methods in Educational Data Mining. Graduate School of Education, University of Pennsylvania.
Fall 2022.

Adaptive Learning Systems. Graduate School of Education, University of Pennsylvania.
Fall 2022.

Big Data, Education, and Society. Graduate School of Education, University of Pennsylvania.
Fall 2021.

Foundations of Teaching and Learning. Graduate School of Education, University of Pennsylvania.
Fall 2021.

Intelligent Tutoring Systems. Graduate School of Education, University of Pennsylvania.
Fall 2020.

Core Methods in Educational Data Mining. Graduate School of Education, University of Pennsylvania.
Fall 2020.

Big Data, Education, and Society. Graduate School of Education, University of Pennsylvania.
Spring 2020.

Big Data and Education. Taught on edX for University of Pennsylvania.
On-demand course starting Fall 2019.

Big Data and Education. Taught on edX for University of Pennsylvania.
Summer 2019.

Core Methods in Educational Data Mining. Graduate School of Education, University of Pennsylvania.
Spring 2019.

Foundations of Teaching and Learning. Graduate School of Education, University of Pennsylvania.
Fall 2018.

Big Data and Education. Taught on edX for University of Pennsylvania.
Spring 2018.

Big Data, Education, and Society. Graduate School of Education, University of Pennsylvania.
Spring 2018.

Foundations of Teaching and Learning. Graduate School of Education, University of Pennsylvania.
     Fall 2017.

Big Data and Education. Taught on edX for University of Pennsylvania.
     Summer 2017. Enrollment of 4,230 students at time of course end.

Core Methods in Educational Data Mining. Graduate School of Education, University of Pennsylvania.
     Spring 2017.

Foundations of Teaching and Learning. Graduate School of Education, University of Pennsylvania.
     Fall 2016.

Learning Analytics: Process & Theory. Department of Human Development, Teachers College, Columbia University. Concurrently for Moray House School of Education, University of Edinburgh. (Co-taught with Dragan Gasevic)
     Spring 2016.

Technology & Human Development. Department of Human Development, Teachers College, Columbia University.
     Spring 2016

Core Methods in Educational Data Mining. Department of Human Development, Teachers College, Columbia University.
     Fall 2015 (student course evals: 4.6/5.0)

Big Data and Education. Taught on edX for Teachers College, Columbia University.
     Summer 2015. Enrollment of 10,348 students at time of course end.

Probability and Statistical Inference. Department of Human Development, Teachers College, Columbia University.
     Spring 2015 (student course evals: 4.6/5.0; 2014 average for this course was 3.5)

Feature Engineering Studio. Department of Human Development, Teachers College, Columbia University.
     Spring 2015 (student course evals: 4.3/5.0)

Core Methods in Educational Data Mining. Department of Human Development, Teachers College, Columbia University.
     Fall 2014 (student course evals: 3.8/5.0)

Data, Analytics, and Learning. Taught on EdX for University of Texas, Arlington, in coordination with George Siemens, Dragan Gasevic, and Carolyn Rosé. Fall 2014. Enrollment of 25,186 students at time of course end.

Learning Analytics: Process and Theory. Department of Human Development, Teachers College, Columbia University.
     Spring 2014 (student course evals: 4.7/5.0; univ. average 4.2)

Big Data and Education. Taught on Coursera for Teachers College, Columbia University.
    Fall 2013. Enrollment of 44,151 students (as of 12/12/2013)

Feature Engineering Studio. Department of Human Development, Teachers College, Columbia University.
    Fall 2013 (student course evals: 4.5/5.0)

Special Topics in Educational Data Mining. Department of Human Development, Teachers College, Columbia University.
    Spring 2013 (student course evals: 4.3/5.0)

Advanced Methods and Analysis for the Learning and Social Sciences. Department of Social Sciences and Policy Studies, Worcester Polytechnic Institute.
    Spring 2012. (student course evals: 4.86/5.0)

Cognitive Psychology. Department of Social Sciences and Policy Studies, Worcester Polytechnic Institute.
    Fall 2011, A term. (student course evals: 4.13/5.0; univ. avg. for ugrad classes 4.10)
    Fall 2010, B term. (student course evals: 4.22/5.0; univ. avg. for ugrad classes 4.04)

Meta-Cognition, Motivation, and Affect. Department of Social Sciences and Policy Studies, Worcester Polytechnic Institute.
    Spring 2011. (student course evals: 4.5/5.0; univ. avg. for grad classes 4.22)

Educational Psychology. (taught as ISP)**.** Department of Social Sciences and Policy Studies, Worcester Polytechnic Institute.
    Spring 2011, D term. (student course evals not collected)
    Fall 2010, A term. (student course evals not collected)

Research Methods for the Learning Sciences (taught as ISP)**.** Department of Social Sciences and Policy Studies, Worcester Polytechnic Institute.
    Spring 2010, C term. (student course evals: 5.0/5.0; univ. avg. for grad classes 4.20)

Learning and Motivation. Co-taught with Vincent Aleven. Human-Computer Interaction Institute and Department of Psychology, Carnegie Mellon University. Spring 2009.

Design e Communicação na Web. (Design and Communication on the Web). Programa de Pos-Graduação em Engenharia de Software (Software Engineering Post-Graduate Program). Faculdade de Alagoas (Alagoas College). December 2008.

Research Methods for the Learning Sciences. Co-taught with Kenneth R. Koedinger. Human-Computer Interaction Institute, Carnegie Mellon University. Spring 2008.

Learning and Technology. Co-taught with Claire O'Malley. Learning Sciences Research Institute, University of Nottingham. Spring 2007.

Human-Computer Interaction for Computer Scientists. Co-taught with Kenneth R. Koedinger, Jacob Wobbrock, and A. Fleming Seay. Human-Computer Interaction Institute, Carnegie Mellon University. Spring 2004.

PUBLICATIONS

Total citations: 35,502 (Google Scholar, May 29, 2025)

h-index: 82 (Google Scholar, May 29, 2025)

Most cited paper: (Baker & Yacef, 2009)
(2,466 citations – Google Scholar, May 29, 2025)
(Winner, Prof. Ram Kumar Educational Data Mining Test of Time Award)

Number of distinct co-authors on published papers: 553
https://docs.google.com/spreadsheets/d/12MR0nPoEPjBzC4N0-_hmXOlnDNC-jcFpVrOsAnNtEQE/edit?gid=0#gid=0

Full list of citations per paper: http://scholar.google.com/citations?hl=en&user=hvs8PEoAAAAJ
ORCID: 0000-0002-3051-3232

Journal Papers

Kaliisa, R., Baker, R.S., Wasson, B., Prinsloo, P. (in press) The Coming but Uneven Storm: How AI Regulation Will Impact AI & Learning Analytics Research in Different Countries. *Journal of Learning Analytics.*

Zambrano, A.F., Singhal, S., Pankiewicz, M., Baker, R.S., Porter, C., Liu, X. (2025) De-identifying student personally identifying information in discussion forum posts with large language models. *Information and Learning Sciences, 126,* 5/6, 401-424.

Nasiar, N., Shah, M., Baker, R.S., Pankiewicz, M. (2025) Scaffolding Creativity or Homogenizing Outputs? GPT-based Virtual TA's Impact on Student Ideation in Graduate Education. *Social Innovations Journal, 30.*

Liu, X., Zambrano, A.F., Baker, R.S., Barany, A., Ocumpaugh, J., Zhang, J., Pankiewicz, M., Nasiar, N., Wei, Z. (2025) Qualitative Coding with GPT-4: Where it Works Better. *Journal of Learning Analytics, 12* (1), 169-185.

Baker, R.S., Cloude, E., Andres, J.M.A.L., Wei, Z. (2025) The Confrustion Constellation: A New Way of Looking at Confusion and Frustration. *Cognitive Science, 49* (1), e77035.

Ocumpaugh, J.L., Roscoe, R., Baker, R.S., Hutt, S., Aguilar, S. (2024) Toward Asset-based Instruction and Assessment in Artificial Intelligence in Education. *International Journal of Artificial Intelligence and Education, 34,* 1559-1598.

Gouveia, C., Wimer, S., Baker, R.S., Granville, P., Babock, B. (2024) Predictive Validity of the HESI Radiography Exit Exam and Best Practices for ARRT Certification Exam Success. *Radiologic Technology, 95* (6), 402-414.

Tao, Y., Viberg, O., Baker, R.S., Kizilcec, R.F. (2024) Cultural Bias and Cultural Alignment of Large Language Models. *PNAS Nexus, 2024,* 3, 346-353.

Hutt, S., Wong, A., Papoutsaki, A., Baker, R.S., Gold, J.I., Mills, C. (2024) Webcam-based eye tracking to detect mind wandering and comprehension errors. *Behavior Research Methods, 56* (1), 1-17.

Baker, R.S., Richey, J.E., Zhang, J., Karumbaiah, S., Andres-Bray, J.M., Nguyen, H.A., Andres, J.M.A.L., McLaren, B.M. (2024) Gaming the System Mediates the Relationship Between Gender and Learning Outcomes in a Digital Learning Game. *Instructional Science.*

Baker, R.S., Hutt, S., Bosch, N., Ocumpaugh, J., Biswas, G., Paquette, L., Andres, J.M.A., Nasiar, N., Munshi, A. (2023) Detector-Driven Classroom Interviewing: Focusing Qualitative Researcher Time by Selecting Cases in Situ. *Educational Technology Research & Development, 72,* 2841-2863.

Karumbaiah, S., Baker, R.S., Ocumpaugh, J., Andres, J.M.A.L. (2023) A Re-Analysis and Synthesis of Data on Affect Dynamics in Learning. *IEEE Transactions on Affective Computing*, 14 (2), 1696-1710.

Nicolay, B., Krieger, F., Kuhn, J-T., Graesser, A.C., Ifenthaler, D., Baker, R., Greiff, S. (2023) Unsuccessful and Successful Complex Problem Solvers – A Log file Analysis of Complex Problem Solving Strategies across Multiple Tasks. *Intelligence, 101,* p. 101793.

Baker, R., Scruggs, R., Pavlik, P.I., McLaren, B.M., Liu, Z. (2023) How Well Do Contemporary Knowledge Tracing Algorithms Predict the Knowledge Carried Out of a Digital Learning Game? *Educational Technology Research & Development, 71,* 901-918.

Munshi, A., Biswas, G., Baker, R., Ocumpaugh, J., Hutt, S., Paquette, L. (2023) Analysing Adaptive Scaffolds that Help Students Develop Self-Regulated Learning Behaviors. *Journal of Computer Assisted Learning, 39* (2), 351-368.

Baker, R.S. (2023) AI and Self-Regulated Learning Theory: What Could be on the Horizon? To appear in *Computers and Human Behavior.*

Baker, R.S., Esbenshade, L., Vitale, J.M., Karumbaiah, S. (2023) Using Demographic Data as Predictor Variables: a Questionable Choice. *Journal of Educational Data Mining, 15* (2), 22-52.

Baker, R. (2023) Learning Analytics: An Opportunity for Education. *XRDS Crossroads, 29* (3), 18-21.

Belitz, C., Ocumpaugh, J., Ritter, S., Baker, R.S., Fancsali, S.E., Bosch, N. (2023) Constructing Categories: Moving Beyond Protected Classes in Algorithmic Fairness. *Journal of the Association for Information Science and Technology, 74* (6), 663-668.

Riley, T.A., Gouveia, C., Baker, R.S., Ruiz, K., San Pedro, M.O.C.Z. (2023) Supporting student success on the practical nurse (PN) licensure exam: The Health Education Systems Incorporated (HESI) PN Exit Exam Study. *Nurse Education Today, 121,* 105669.

Baker, R.S., Nasiar, N., Gong, W., Porter, C. (2022) The impacts of learning analytics and A/B testing research: a case study in differential scientometrics. *International Journal of STEM Education*, 9, 16.

Rahimi, S., Shute, V.J., Fulwider, C., Bainbridge, K., Kuba, R., Yang, X., Smith, G., Baker, R.S., D'Mello, S.K. (2022) Timing of Learning Support in Educational Games can Impact Students' Outcomes. *Computers and Education, 190,* 104600.

Ruipérez-Valiente, J., Kim, Y.J., Baker, R.S., Martínez, P.A., Lin, G.C. (2022) The Affordances of Multivariate Elo-based Learner Modeling in Game-Based Assessment. *IEEE Transactions on Learning Technologies, 16* (5), 152-165.

Zhang, J., Andres, J.M.A.L., Hutt, S., Baker, R.S., Ocumpaugh, J., Nasiar, N., Mills, C., Brooks, J., Sethuraman, S., Young, T. (2022) Using Machine Learning to Detect SMART Model Cognitive Operations in Mathematical Problem-Solving Process. *Journal of Educational Data Mining,* 14 (3), 76-108.

Baker, R.S., Hawn, M.A. (2022) Algorithmic Bias in Education. *International Journal of Artificial Intelligence and Education*, *32*, 1052-1092.

Hutt, S., Baker, R.S., Mogessie, M., Andres-Bray, J.M., Brooks, C. (2022) Controlled Outputs, Full Data: A Privacy-Protecting Infrastructure for MOOC Data. *British Journal of Educational Technology, 53* (4), 756-775.

Nawaz, S., Srivastava, N., Yu, J.H., Khan, A.A., Kennedy, G., Bailey, J., Baker, R.S. (2022) How Difficult is the Task for you? Modelling and Analysis of Students' Task Difficulty Sequences in a Simulation-Based POE Environment. *International Journal of Artificial Intelligence and Education, 32* (3), 233-262. https://doi.org/10.1007/s40593-021-00242-6

Baker, R.S., Boser, U., Snow, E.L. (2022) Learning Engineering: A View on Where the Field is at, Where it's Going, and the Research Needed. *Technology, Mind, and Behavior, 3* (1)*,* https://doi.org/10.1037/tmb0000058

Bainbridge, K., Shute, V., Rahimi, S, Liu, Z., Slater, S., Baker, R.S., D'Mello, S.K. (2022) Does embedding learning supports enhance transfer during game-based learning? *Learning and Instruction, 77,* 101547*.*

Kang, J., Baker, R., Feng, Z., Na, C., Granville, P., Feldon, D.F. (2022) Detecting threshold concepts through Bayesian knowledge tracing: examining research skill development in biological sciences at the doctoral level. *Instructional Science*. https://doi.org/10.1007/s11251-022-09578-5

Zhang, Y., Paquette, L., Baker, R.S., Bosch, N., Ocumpaugh, J., Biswas, G. (2022) How are feelings of difficulty and familiarity linked to learning behaviors and gains in a complex science learning task? *European Journal of Psychology of Education.* https://doi.org/10.1007/s10212-022-00616-x

Zhang, Y., Paquette, L., Bosch, N., Ocumpaugh, J., Biswas, G., Hutt, S., Baker, R.S. (2022) The Evolution of Metacognitive Strategy Use in an Open-Ended Learning Environment: Do Prior Domain Knowledge and Motivation Play a Role? *Contemporary Educational Psychology, 69,* 102064.

Shah, M., Fuller, B., Gouveia, C., Mee, C.L., Baker, R.S., San Pedro, M.O.Z. (2022) NCLEX-RN readiness: HESI Exit Exam validity and nursing program policies. *Journal of Professional Nursing, 39*, 131-138.

Karumbaiah, S., Ocumpaugh, J., Baker, R.S. (2021) Context Matters: Differing Implications of Motivation and Help-Seeking in Educational Technology. *International Journal of Artificial Intelligence and Education, 32,* 685-724. https://doi.org/10.1007/s40593-021-00272-0

Mojarad, S., Baker, R.S., Essa, A., Stalzer, S. (2021) Replicating Studying Adaptive Learning Efficacy using Propensity Score Matching and Inverse Probability of Treatment Weighting. *Journal of Interactive Learning Research, 32* (3), 169-203.

Godwin, K.E., Seltman, H., Almeda, M., Skerbetz, M.D., Kai, S., Baker, R.S., Fisher, A.V. (2021) The elusive relationship between time-on-task and learning: not simply an issue of measurement. *Educational Psychology, 41,* 502-519.

Baker, R.S., Gasevic, D., Karumbaiah, S. (2021) Four Paradigms in Learning Analytics: Why Paradigm Convergence Matters. *Computers & Education: Artificial Intelligence, 2,* 100021.
    Re-published in Chinese translation in *Distance Education in China, 12,* 38-52.

Rebolledo-Mendez, G., Huerta-Pacheco, S., Baker, R.S., du Boulay, B. (2021) Meta-affective behaviour within an intelligent tutoring system for mathematics. *International Journal of Artificial Intelligence and Education, 32,* 174-195.

Zhang, Y., Paquette, L., Baker, R.S., Ocumpaugh, J., Bosch, N., Biswas, G., Munshi, A. (2021) Can strategic behavior facilitate confusion resolution? The interplay between confusion and metacognitive strategies in Betty's Brain. *Journal of Learning Analytics, 8* (3), 28-44.

Molenaar, I., Horvers, A., Baker, R.S. (2021) What can Moment-by-Moment learning curves tell about students' self-regulated learning? *Learning and Instruction*, *72.*

Rowe, E., Almeda, M. V., Asbell-Clarke, J., Scruggs, R., Baker, R., Bardar, E., & Gasca, S. (2021). Assessing implicit computational thinking in Zoombinis puzzle gameplay. *Computers in Human Behavior, 120*.
%
Asbell-Clarke, J., Rowe, E., Almeda, V., Edwards, T., Bardar, E., Gasca, S., Baker, R.S., Scruggs, R. (2021). The development of students' computational thinking practices in elementary- and middle-school classes using the learning game, Zoombinis. *Computers in Human Behavior*, *115*

Owen, V.E., Baker, R.S. (2020) Fueling Prediction of Player Decisions: Foundations of Feature Engineering for Optimized Behavior Modeling in Serious Games. *Technology, Knowledge, and Learning, 25* (2), 225-250.

Fischer, C., Pardos, Z.A., Baker, R.S., Williams, J.J., Smyth, P., Yu, R., Slater, S., Baker, R., Warschauer, M. (2020) Mining Big Data in Education: Affordances and Challenges. *Review of Research in Education, 44* (1), 130-160.

Crossley, S.A., Karumbaiah, S., Ocumpaugh, J., Labrum, M.J., Baker, R.S. (2020) Predicting math identity through language and click-stream patterns in a blended learning mathematics program for elementary students. *Journal of Learning Analytics*.

Baker, R.S., Berning, A.W., Gowda, S.M., Zhang, S., Hawn, A. (2020) Predicting K-12 Dropout. *Journal of Education For Students Placed at Risk, 25,* 28-54.

Paquette, L., Ocumpaugh, J., Li, Z., Andres, J.M.A.L., Baker, R.S. (2020) Who's Learning? Using Demographics in EDM Research. *Journal of Educational Data Mining, 12* (3), 1-30.

Patikorn, T., Baker, R.S., Heffernan, N.T. (2020) ASSISTments Longitudinal Data Mining Competition Special Issue: A Preface. *Journal of Educational Data Mining, 12 (2),* i-xi.

Almeda, M.V.Q., Baker, R.S. (2020) Predicting Student Participation in STEM Careers: The Role of Affect and Engagement during Middle School. *Journal of Educational Data Mining, 12* (2), 33-47.

Slater, S., Baker, R.S. (2019) Forecasting Future Student Mastery. *Distance Education*, *40* (3), 380-394.

Richey, J.E., Andres-Bray, J.M.L., Mogessie, M., Scruggs, R., Andres, J.M.A.L., Star, J.R., Baker, R.S., McLaren, B.M. (2019) More Confusion and Frustration, Better Learning: The Impact of Erroneous Examples. *Computers and Education*, *139,* 173-190.

Paquette, L., Baker, R.S. (2019) Comparing machine learning to knowledge engineering for student behavior modeling: a case study in gaming the system. *Interactive Learning Environments,* 585-597.

Baker, R.S. (2019) Challenges for the Future of Educational Data Mining: The Baker Learning Analytics Prizes. *Journal of Educational Data Mining, 11* (1), 1-17.

Baker, R.S., Ogan, A.E., Madaio, M., Walker, E. (2019) Culture in Computer-Based Learning Systems: Challenges and Opportunities. *Computer-Based Learning in Context, 1* (1), 1-13.

Slater, S., Baker, R.S. (2018) Degree of Error in Bayesian Knowledge Tracing Estimates From Differences in Sample Sizes. *Behaviormetrika, 45* (2), 475-493.

Jiang, Y., Clarke-Midura, J., Keller, B., Baker, R.S., Paquette, L., Ocumpaugh, J. (2018) Note-taking and science inquiry in an open-ended learning environment. *Contemporary Educational Psychology, 55,* 12-29.

Salmeron-Majadas, S., Baker, R.S., Santos, O.C., Boticario, J.G. (2018) A Machine Learning Approach to Leverage Individual Keyboard and Mouse Interaction Behavior from Multiple Users in Real-World Learning Scenarios. *IEEE Access,* 39154-39179.

Reid, J., Baker, R.S. (2018) Designing and Testing an Educational Innovation. *Pediatric Radiology, 48* (10), 1406-1409.

Kai, S., Almeda, M.V., Baker, R.S., Heffernan, C., Heffernan, N. (2018) Decision Tree Modeling of Wheel-Spinning and Productive Persistence in Skill Builders. *Journal of Educational Data Mining, 10* (1), 36-71.

Wang, Y., Baker, R.S. (2018) Grit and intention: why do learners complete MOOCs? *The International Review of Research in Open and Distributed Learning, 19* (3).

DeFalco, J., Rowe, J.P., Paquette, L., Georgoulas-Sherry, V., Brawner, J., Mott, B.W., Baker, R.S., Lester, J.C. (2018) Detecting and Addressing Frustration in a Serious Game for Military Training. *International Journal of Artificial Intelligence and Education, 28* (2), 152-193.

Sottilare, R.A., Baker, R.S., Graesser, A.C., Lester, J.C. (2018) Special Issue on the Generalized Intelligent Framework for Tutoring (GIFT): Creating a Stable and Flexible Platform for Innovations in AIED Research. *International Journal of Artificial Intelligence and Education, 28* (2), 139-151.

Almeda, M.V., Zuech, J. Baker, R.S., Utz, C., Higgins, G., Reynolds, R. (2018) Do The Same Factors Predict Success among For-Credit and Open/MOOC students in Online Learning? *Online Learning Journal*, *22* (1).

Baker, R., Wang, F., Ma, Z., Ma, W., Zheng, S. (2018) Studying the Effectiveness of an Online Language Learning Platform in China. *Journal of Interactive Learning Research, 29* (1), 5-24.

Andres, J.M.L., Baker, R.S., Siemens, G., Gasevic, D., Spann, C.A. (2017) Replicating 21 Findings on Student Success in Online Learning. *Technology, Instruction, Cognition, and Learning*, *10* (4), 313-333.

San Pedro, M.O., Baker, R.S., Heffernan, N.T. (2017) An Integrated Look at Middle School Engagement and Learning in Digital Environments as Precursors to College Attendance. *Technology, Knowledge and Learning, 22* (3), 243-273.

Asbell-Clarke, J., Baker, R., Eagle, M., Hicks, A., Barnes, T., Brown, R., Edwards, T. (2017) Assessing Implicit Science Learning in Digital Games. *Computers in Human Behavior, 76,* 617-630.

Almeda, V., Baker, R., Corbett, A. (2017) Help Avoidance: When Students Should Seek Help, and the Consequences of Failing to Do So. *Teachers College Record*, 117 (3).

Slater, S., Joksimovic, S., Kovanovic, V., Baker, R.S., Gasevic, D. (2017) Tools for Educational Data Mining: A Review. *Journal of Educational and Behavioral Statistics*, *42* (1), 85-106.

Bosch, N., D'Mello, S.K., Ocumpaugh, J., Baker, R.S., Shute, V. (2016) Using video to automatically detect learner affect in computer-enabled classrooms. *ACM Transactions on Interactive Intelligent Systems (TiiS), 6*(2).

Ocumpaugh, J., San Pedro, M.O., Lai, H-y., Baker, R.S., Borgen, F. (2016) Middle School Engagement with Mathematics Software and Later Interest and Self-Efficacy for STEM Careers. *Journal of Science Education and Technology, 25* (6), 877-887.

Godwin, K.E., Almeda, M.V., Seltman, H., Kai, S., Skerbetz, M.D., Baker, R.S., Fisher, A.V. (2016) Off-task Behavior in Elementary School Children. *Learning and Instruction, 44,* 128-143.

Baker, R.S. (2016) Stupid Tutoring Systems, Intelligent Humans. *International Journal of Artificial Intelligence and Education, 26* (2), 600-614.

Baker, R., Clarke-Midura, J., Ocumpaugh, J. (2016) Toward General Models of Effective Science Inquiry in Virtual Performance Assessments. *Journal of Computer Assisted Learning*, 32 (3), 267-280.

Kovanovic, V. Gasevic, D., Dawson, S., Joksimovic, S., Baker, R.S., Hatala, M. (2015) Does Time-on-task Estimation Matter? Implications on Validity of Learning Analytics Findings. *Journal of Learning Analytics, 2* (3).

Mulqueeny, K., Kostyuk, V., Baker, R.S., Ocumpaugh, J. (2015) Incorporating Effective e-Learning Principles to Improve Student Engagement in Middle-School Mathematics. *International Journal of STEM Education, 2 (15).*

Shute, V.J., D'Mello, S., Baker, R., Cho, K., Bosch, N., Ocumpaugh, J., Ventura, M., Almeda, V. (2015) Modeling how incoming knowledge, persistence, affective states, and in-game progress influence student learning from an educational game. *Computers & Education, 86,* 224-235.

Comer, D., Baker, R., Wang, Y. (2015) Negativity in Massive Online Open Courses: Impacts on Learning and Teaching. *InSight: A Journal of Scholarly Teaching, 10.*

Ogan, A., Walker, E., Baker, R., Rodrigo, M.M.T., Soriano, J.C., Castro, M.J. (2015) Towards Understanding How to Assess Help-Seeking Behavior Across Cultures. *International Journal of Artificial Intelligence in Education, 25* (2), 229-248.

Gobert, J.D., Baker, R.S., Wixon, M.B. (2015) Operationalizing and Detecting Disengagement Within Online Science Microworlds. *Educational Psychologist, 50* (1), 43-57.

Wang, Y. Baker, R. (2015) Content or Platform: Why do students complete MOOCs? *MERLOT Journal of Online Learning and Teaching, 11* (1), 17-30.

Wang, Y.E., Paquette, L., Baker, R. (2014) A Longitudinal Study on Learner Career Advancement in MOOCs. *Journal of Learning Analytics, 1* (3), 203-206.

Roll, I., Baker, R.S.Jd., Aleven, V., Koedinger, K.R. (2014) On the Benefits of Seeking (and Avoiding) Help in Online Problem-Solving Environments. *Journal of the Learning Sciences*, 23 (4), 537-560.

Baker, R.S., Corbett, A.T. (2014) Assessment of Robust Learning with Educational Data Mining. *Research & Practice in Assessment, 9*, 38-50.

Baker, R.S. (2014) Educational Data Mining: An Advance for Intelligent Systems in Education. *IEEE Intelligent Systems*, 29 (3), 78-82.

Berland, M., Baker, R.S., Blikstein, P. (2014) Educational data mining and learning analytics: Applications to constructionist research. *Technology, Knowledge, and Learning*, 19, 205-220.

Miller, W.L., Baker, R.S., Rossi, L.M. (2014) Unifying Computer-Based Assessment Across Conceptual Instruction, Problem-Solving, and Digital Games. *Technology, Knowledge, and Learning*, *19,* 165-181.

Pardos, Z.A., Baker, R.S., San Pedro, M.O.C.Z., Gowda, S.M., Gowda, S.M. (2014) Affective states and state tests: Investigating how affect and engagement during the school year predict end of year learning outcomes. *Journal of Learning Analytics*, *1* (1), 107-128.

Ocumpaugh, J., Baker, R., Gowda, S., Heffernan, N., Heffernan, C. (2014) Population validity for Educational Data Mining models: A case study in affect detection. *British Journal of Educational Technology, 45* (3), 487-501.

San Pedro, M.O.Z., Baker, R.S.J.d., Rodrigo, M.M.T. (2014) Carelessness and Affect in an Intelligent Tutoring System for Mathematics. *International Journal of Artifiical Intelligence in Education, 24,* 189-210.

Baker, R.S.J.d., Corbett, A.T., Gowda, S.M. (2013) Generalizing Automated Detection of the Robustness of Student Learning in an Intelligent Tutor for Genetics. *Journal of Educational Psychology*, *105* (4), 946-956.

Rodrigo, M.M.T., Baker, R.S.J.d., Rossi, L. (2013) Student Off-Task Behavior in Computer-Based Learning in the Philippines: Comparison to Prior Research in the USA. *Teachers College Record, 115* (10), 1-27.

Porayska-Pomsta, K., Mavrikis, M., D'Mello, S., Conati, C., Baker, R.S.J.d. (2013) Knowledge Elicitation Methods for Affect Modeling in Education. *International Journal of Artificial Intelligence in Education, 22* (3), 107-140.

Baker, R.S.J.d., Hershkovitz, A., Rossi, L.M., Goldstein, A.B., Gowda, S.M. (2013) Predicting Robust Learning With the Visual Form of the Moment-by-Moment Learning Curve. *Journal of the Learning Sciences, 22* (4), 639-666.

Gobert, J.D., Sao Pedro, M., Raziuddin, J., Baker, R. (2013) From Log Files to Assessment Metrics: Measuring Students' Science Inquiry Skills Using Educational Data Mining. *Journal of the Learning Sciences, 22* (4), 521-563.

Gowda, S.M., Baker, R.S.J.d., Corbett, A.T., Rossi, L.M. (2013) Towards Automatically Detecting Whether Student Learning is Shallow. *International Journal of Artificial Intelligence in Education, 23* (1), 50-70.

Hershkovitz, A., Baker, R.S.J.d., Gobert, J., Wixon, M., Sao Pedro, M. (2013) Discovery with Models: A Case Study on Carelessness in Computer-based Science Inquiry. *American Behavioral Scientist, 57* (10), 1479-1498.

Winne, P.H., Baker, R.S.J.d. (2013) The Potentials of Educational Data Mining for Researching Metacognition, Motivation, and Self-Regulated Learning. *Journal of Educational Data Mining, 5* (1), 1-8.

Sao Pedro, M.A., Baker, R.S.J.d., Gobert, J., Montalvo, O. Nakama, A. (2013) Leveraging Machine-Learned Detectors of Systematic Inquiry Behavior to Estimate and Predict Transfer of Inquiry Skill. *User Modeling and User-Adapted Interaction, 23* (1), 1-39.

Koedinger, K.R., Brunskill, E., Baker, R.S.J.d., McLaughlin, E.A., Stamper, J. (2013) New Potentials for Data-Driven Intelligent Tutoring System Development and Optimization. *AI Magazine, 34* (3), 27-41.

Gobert, J.D., Sao Pedro, M.A., Baker, R.S.J.d., Toto, E., Montalvo, O. (2012) Leveraging Educational Data Mining for Real-time Perfomance Assesment of Scientific Inquiry Skills within Microworlds. *Journal of Educational Data Mining, 4* (1), 111-143.

Rodrigo, M.M.T., Baker, R.S.J.d., Agapito, J., Nabos, J., Repalam, M.C., Reyes, S.S., San Pedro, M.C.Z. (2012) The Effects of an Interactive Software Agent on Student Affective Dynamics while Using an Intelligent Tutoring System. *IEEE Transactions on Affective Computing, 3* (2), 224-236.

Desmarais, M.C., Baker, R.S.J.d. (2012) A Review of Recent Advances in Learner and Skill Modeling in Intelligent Learning Environments. *User Modeling and User-Adapted Interaction, 22* (1-2), 9-38.

Baker, R.S.J.d., Goldstein, A.B., Heffernan, N.T. (2011) Detecting Learning Moment-by-Moment. *International Journal of Artificial Intelligence in Education, 21* (1-2), 5-25.

Pardos, Z.A., Baker, R.S.J.d., Gowda, S.M., Heffernan, N.T. (2011) The Sum is Greater than the Parts: Ensembling Models of Student Knowledge in Educational Software. *SIGKDD Explorations, 13* (2), 37-44.

Rodrigo, M.M.T., Baker, R.S.J.d. (2011) Comparing Learners' Affect While Using an Intelligent Tutor and an Educational Game. *Research and Practice in Technology Enhanced Learning, 6* (1), 43-66.

Baker, R.S.J.d., Isotani, S., de Carvalho, A. (2011) Mineração de Dados Educacionais: Oportunidades para o Brasil. *Revista Brasileira de Informática na Educação, 19 (2),* 3-13.

Baker, D.J., Baker, R.S.J.d., Uhing, B. (2011) Content of Instruction for Transition-age Youth with Disabilities: A Brief Report. *National Association for the Dually Diagnosed (NADD) Bulletin*, *14 (5),* 89-94.

Baker, R.S.J.d. (2011) Gaming the System: A Retrospective Look. *Philippine Computing Journal, 6* (2), 9-13.

Baker, R.S.J.d., D'Mello, S.K., Rodrigo, M.M.T., Graesser, A.C. (2010) Better to Be Frustrated than Bored: The Incidence, Persistence, and Impact of Learners' Cognitive-Affective States during Interactions with Three Different Computer-Based Learning Environments. *International Journal of Human-Computer Studies*, *68* (4), 223-241.

Baker, R.S.J.d., Yacef, K. (2009) The State of Educational Data Mining in 2009: A Review and Future Visions. *Journal of Educational Data Mining*, 1 (1), 3-17. **[Winner, 2020 Prof. Ram Kumar Educational Data Mining Test of Time Award]**

Baker, R.S.J.d., Corbett, A.T., Roll, I., Koedinger, K.R. (2008) Developing a Generalizable Detector of When Students Game the System. *User Modeling and User-Adapted Interaction, 18* (3), 287-314.

Baker, R.S.J.d., Walonoski, J.A., Heffernan, N.T., Roll, I., Corbett, A.T., Koedinger, K.R. (2008) Why Students Engage in "Gaming the System" Behavior in Interactive Learning Environments. *Journal of Interactive Learning Research*, 19 (2), 185-224.

Baker, R.S.J.d., Corbett, A.T., Koedinger, K.R. (2007) The Difficulty Factors Approach to the Design of Intelligent Tutoring Systems. *International Journal of Artificial Intelligence in Education,* 17 (4), 341-369.

Baker, R.S., Corbett, A.T., Koedinger, K.R. (2006) Responding to Problem Behaviors in Cognitive Tutors: Towards Educational Systems Which Support All Students. *National Association for the Dually Diagnosed (NADD) Bulletin,* 9 (4), 70-75.

Tamassia R., Goodrich M.T., Vismara L., Handy M., Cohen R., Hudson B., Baker, R.S., Gelfand, N., Shubina G., Brandes U. (2001) JDSL: The Data Structures Library in Java. *Dr. Dobb's Journal and Sourcebook*, April 2001, 21-33.

Book Chapters

Liu, X., Pankiewicz, M., Gupta, T., Huang, Z., Baker, R.S. (in press) A Step Towards Adaptive Online Learning: Exploring the Role of GPT as Virtual Teaching Assistants in Online Education. To appear in M.S. Khine, B. Laszlo, E. Afari (Eds.) *Future of Learning with Large Language Models: Applications and Research in Education*. New York, NY: CRC Press.

Baker, R.S. (in press) Algorithmic Bias in Education and Steps Towards Fairness. In A.S. Wells, E.N. Walker (Eds.) Learning and Thriving Across the Lifespan: The 100-Year Intellectual Legacy of Professor Edmund Gordon.

Baker, R., Hawn, M.A., Lee, S. (2023). Algorithmic bias: the state of the situation and policy recommendations, in OECD Digital Education Outlook 2023: Towards an Effective Digital Education Ecosystem, OECD Publishing, Paris.

Hutt, S., Baker, R.S., Ocumpaugh, J., Munshi, A., Andres, J.M.A.L., Karumbaiah, S., Slater, S., Biswas, G., Paquette, L., Bosch, N., van Velsen, M. (2023) Quick Red Fox: An App Supporting a New Paradigm in Qualitative Research on AIED for STEM. In Ouyang, F., Jiao, P., McLaren, B.M., Alavi, A.H. (Eds.) *Artificial Intelligence in STEM Education: The Paradigmatic Shifts in Research, Education, and Technology,* p. 319-332.

Baker, R.S. (2023) The Current Trade-off Between Privacy and Equity in Educational Technology. In G. Brown III, C. Makridis (Eds.) *The Economics of Equity in K-12 Education: Necessary Programming, Policy, and Systemic Changes to Improve the Economic Life Chances of American Students,* pp 123-138. Lanham, MD: Rowman & Littlefield.

San Pedro, M.O.Z., Baker, R.S., Bowers, A., Heffernan, N.T. (2022) Exploring Selective College Attendance and Middle School Cognitive and Non-Cognitive Factors within Computer-Based Math Learning. In Y. Wang, Joksimovic, S., San Pedro, M.O.Z., Way, J.D., Whitmer, J. (Eds.)

Social and Emotional Learning: An Inclusive Learning Analytics Perspective. Heidelberg: Springer.

Baker, R., Siemens, G. (2022) Educational data mining and learning analytics. In Sawyer, K. (Ed.) *Cambridge Handbook of the Learning Sciences: 3rd Edition*.

San Pedro, M.O.Z., Baker, R.S. (2021) Knowledge Inference Models Used in Adaptive Learning. In A.A. von Davier, R.J. Mislevy, J. Hao (Eds.) *Computational Psychometrics: New Methodologies for a New Generation of Digital Learning and Assessment.* Berlin: Springer.

Baker, R.S. (2021) Artificial Intelligence in Education: Bringing It All Together. In *OECD Digital Education Outlook 2021: Pushing the frontiers with AI, blockchain, and robotics*, pp. 43-56. Paris, France: OECD Publishing.

Baker, R.S., Ocumpaugh, J.L., Andres, J.M.A.L. (2020) BROMP Quantitative Field Observations: A Review. In R. Feldman (Ed.) *Learning Science: Theory, Research, and Practice*, pp. 127-156. New York, NY: McGraw-Hill.

Owen, E., Baker, R.S. (2020) Learning Analytics for Games. In J. Plass, R. Mayer, B. Homer (Eds.) *Handbook of Game-Based Learning*. Cambridge, MA: MIT Press.

Rowe, E., Asbell-Clarke, J., Bardar, E., Almeda, M.V., Baker, R.S., Scruggs, R., Gasca, S. (2019) Advancing Research in Game-Based Learning Assessment: Tools and Methods for Measuring Implicit Learning. In E. Kennedy, Y. Qian (Eds.) *Advancing Educational Research With Emerging Technology*, pp. 99-123.

Ritter, S., Baker, R.S., Rus, V., Biswas, G. (2019) Identifying Strategies in Student Problem Solving. In Sinatra, A.M., Graesser, A.C., Hu, X., Brawner, K., and Rus, V. (Eds.). *Design Recommendations for Intelligent Tutoring Systems: Volume 7 - Self-Improving Systems.* Orlando, FL: US Army CCDC, pp. 59-70.

Hampton, A.J., Baker, R.S. (2019) Reports to Facilitate Improvements of Adaptive Instructional Systems. In Sinatra, A.M., Graesser, A.C., Hu, X., Brawner, K., and Rus, V. (Eds.). *Design Recommendations for Intelligent Tutoring Systems: Volume 7 - Self-Improving Systems.* Orlando, FL: US Army CCDC, pp. 147-152.

Baker, R.S., Koedinger, K.R. (2018) Towards Demonstrating the Value of Learning Analytics. In D. Niemi, R.E. Clark, B. Saxberg, R. Pea (Eds.) *Learning Analytics in Education.* Charlotte, NC: Information Age Publishing.

Jiang, Y., Clarke-Midura, J., Baker, R.S., Paquette, L., Keller, B. (2018) How Immersive Virtual Environments Foster Self-Regulated Learning. In Zheng, R. (Ed.) *Digital Technologies and Instructional Design for Personalized Learning,* pp. 28-54.

Biswas, G., Baker, R.S., Paquette, L. (2017) Data Mining Methods for Assessing Self-Regulated Learning. In D.H. Schunk, J.A. Greene (Eds.) *Handbook of Self-Regulation of Learning and Performance (2nd Edition)*, Ch. 25.

Lamar, M., Baker, R.S., Greiff, S. (2017) Methods for Assessing Inquiry: Machine-learned and Theoretical. In R. Sottilare, X. Hu, G. Goodwin (Eds.) *Design Recommendations for Intelligent Tutoring Systems, vol. 4.* Orlando, FL: Army Research Laboratory, pp. 137-154.

Baker, R.S., Mitros, P., Goldberg, B. Sottilare, R. (2017) Assessing Individual Learner Performance in MOOCs. In R. Sottilare, X. Hu, G. Goodwin (Eds.) *Design Recommendations for Intelligent Tutoring Systems, vol. 4.* Orlando, FL: Army Research Laboratory, pp. 85-96.

Baker, R.S., Martin, T., Rossi, L.M. (2016) Educational Data Mining and Learning Analytics. In A.A. Rupp & J.P. Leighton (Eds.) *Wiley Handbook of Cognition and Assessment: Frameworks, Methodologies, and Applications.* Hoboken, NJ: Wiley-Blackwell, pp.379-396.

Baker, R.S., Inventado, P.S. (2016) Educational Data Mining and Learning Analytics: Potentials and Possibilities for Online Distance Education. In G. Veletsianos (Ed.) *Emergence and Innovation in Digital Learning: Foundations and Applications*, pp. 83-98. Edmonton, Alberta: Athabasca University Press.

Baker, R.S., Wang, Y., Paquette, L., Aleven, V., Popescu, O., Sewall, J., Rose, C., Tomar, G., Ferschke, O., Zhang, J., Cennamo, M., Ogden, S., Condit, T., Diaz, J., Crossley, S., McNamara, D., Comer, D., Lynch, C., Brown, R., Barnes, T., Bergner, Y. (2016) A MOOC on Educational Data Mining. To appear in Zaiane, O., ElAtia, S., Ipperciel, D. (Eds.) *Data Mining and Learning Analytics in Educational Research.* Hoboken, NJ: Wiley-Blackwell, pp. 55-66.

Baker, R. (2016). Using learning analytics in personalized learning. In M. Murphy, S. Redding, & J. Twyman (Eds.), *Handbook on personalized learning for states, districts, and schools,* pp. 165-174.

San Pedro, M.O.Z., Baker, R.S. (2016) Adaptive Learning. In McCarthy, M. (Ed.) *The Cambridge Guide to Blended Learning for Language Technologies*, pp. 234-247.

Rowe, E., Asbell-Clarke, J., Baker, R.S. (2015) Serious Games Analysis to Measure Implicit Science Learning. C.S. Loh, Y. Sheng, D. Ifenthaler. (Eds.) *Serious Games Analytics: Methodologies for Performance Measurement, Assessment, and Improvement.* Berlin, Germany: Springer, pp. 343-362.

Baker, R.S.J.d., Inventado, P.S. (2014) Educational Data Mining and Learning Analytics. To appear in J.A. Larusson, B. White (Eds.) *Learning Analytics: From Research to Practice.* Berlin, Germany: Springer.

Baker, R.S.J.d., Ocumpaugh, J. (2014) Interaction-Based Affect Detection in Educational Software. In R.A. Calvo, S.K. D'Mello, J. Gratch, A. Kappas (Eds.), *The Oxford Handbook of Affective Computing.* Oxford, UK: Oxford University Press.

Baker, R., Siemens, G. (2014) Educational data mining and learning analytics. In Sawyer, K. (Ed.) *Cambridge Handbook of the Learning Sciences: 2nd Edition*, pp. 253-274.

DeFalco, J.A., Baker, R.S., D'Mello, S.K. (2014) Addressing Behavioral Disengagement in Online Learning. In Sottilare, R., Graesser, A., Hu, X., and Goldberg, B. (Eds.). *Design Recommendations for Intelligent Tutoring Systems: Volume 2 - Instructional Management*, pp. 49-56. Orlando, FL: U.S. Army Research Laboratory.

D'Mello, S., Blanchard, N., Baker, R., Ocumpaugh, J., Brawner, K. (2014) I Feel Your Pain: A Selective Review of Affect-Sensitive Instructional Strategies. In Sottilare, R., Graesser, A., Hu, X., and Goldberg, B. (Eds.). *Design Recommendations for Intelligent Tutoring Systems: Volume 2 - Instructional Management*, pp. 35-48. Orlando, FL: U.S. Army Research Laboratory.

Baker, R.S.J.d. (2013) Learning, Schooling, and Data Analytics. In M. Murphy, S. Redding, & J. Twyman (Eds.), *Handbook on Innovations in Learning*, pp.179-190. Philadelphia, PA: Center on Innovations in Learning.

Baker, R.S.J.d., Rossi, L.M. (2013) Assessing the Disengaged Behavior of Learners. In Sottilare, R., Graesser, A., Hu, X., & Holden, H. (Eds.), *Design Recommendations for Intelligent Tutoring Systems – Volume 1 – Learner Modeling*. pp. 155-166. Orlando, FL: U.S. Army Research Lab.

Baker, R.S.J.d., Corbett, A.T., Roll, I., Koedinger, K.R., Aleven, V., Cocea, M., Hershkovitz, A., de Carvalho, A.M.J.B., Mitrovic, A., Mathews, M. (2013) Modeling and Studying Gaming the System with Educational Data Mining. In Azevedo, R., & Aleven, V. (Eds.) *International Handbook of Metacognition and Learning Technologies,* pp. 97-116. New York, NY: Springer.

Rodrigo, M.M.T., Baker, R.S.J.d. (2011) Comparing the Incidence and Persistence of Learners' Affect During Interactions with Different Educational Software Packages. In Calvo, R.A., & D'Mello, S. (Eds.) *New Perspectives on Affect and Learning Technologies.* New York, NY: Springer, pp. 183-202.

Koedinger, K.R., Baker, R.S.J.d., Cunningham, K., Skogsholm, A., Leber, B., Stamper, J. (2010) A Data Repository for the EDM commuity: The PSLC DataShop. In Romero, C., Ventura, S., Pechenizkiy, M., Baker, R.S.J.d. (Eds.) *Handbook of Educational Data Mining.* Boca Raton, FL: CRC Press, pp. 43-56.

Romero, C., Ventura, S., Pechenizkiy, M., Baker, R.S.J.d. (2010) Introduction. In Romero, C., Ventura, S., Pechenizkiy, M., Baker, R.S.J.d. (Eds.) *Handbook of Educational Data Mining.* Boca Raton, FL: CRC Press, pp. 1-8.

Baker, R.S.J.d. (2010) Mining Data for Student Models. In Nkmabou, R., Mizoguchi, R., & Bourdeau, J. (Eds.) *Advances in Intelligent Tutoring Systems,* pp. 323-338. Secaucus, NJ: Springer.

Baker, R.S.J.d. (2010) Data Mining for Education. In McGaw, B., Peterson, P., Baker, E. (Eds.) *International Encyclopedia of Education (3rd edition),* vol. 7, pp. 112-118. Oxford, UK: Elsevier.

Koedinger, K., Aleven, V., Roll, I., Baker, R. (2009) In vivo experiments on whether supporting metacognition in intelligent tutoring systems yields robust learning. Graesser, A., Hacker, D. (Eds.), *Handbook of Metacognition in Education*, 383-412.

Conference Full Papers in Stringently Refereed Proceedings

Stinar, F., Lee, H., Belitz, C., Nasiar, N., Fancsali, S., Ritter, S., Almoubayyed, H., Baker, R.S., Ocumpaugh, J., Bosch, N. (in press) Fairness of Bayesian Knowledge Tracing for Math Learners of Different Reading Ability. *Proceedings of the International Conference on Educational Data Mining.*

Gurung, A., Lin, J., Huang, Z., Borchers, C., Baker, R.S., Aleven, V., Koedinger, K.R. Starting Seatwork Earlier as a Valid Measure of Student Engagement. *Proceedings of the International Conference on Educational Data Mining.*

Deho, O., Joksimovic, S., Vieira, M., Baker, R.S. (in press) Beyond Predictive Accuracy: Fairness and Bias in Predicting Test Anxiety. To appear in the *Proceedings of the International Conference on Artificial Intelligence and Education.*

Wei, Z., Nasiar, N., Zambrano, A.F., Liu, X., Ocumpaugh, J., Barany, A., Baker, R.S., Giordano, C. (in press) Exploring Students' Interest-Driven Patterns of Scientific Observation in Minecraft. To appear in the *Proceedings of the Annual Meeting of the International Society of the Learning Sciences.*

Zhang, J., Baker, R.S., Srivastava, N., Ocumpaugh, J., Mills, C., McLaren, B.M. (in press) Carelessness Detection using Performance Factor Analysis: A New Operationalization with Unexpectedly Different Relationship to Learning. *Proceedings of the 7th International Conference on Computer Science and Technologies in Education.*

Scarlatos, A., Lan, A., Baker, R.S. (in press) Exploring Knowledge Tracing in Tutor-Student Dialogues using LLMs. *Proceedings of the International Conference on Learning Analytics and Knowledge.*

Karimov, A., Saarela, M., Aliyev, S., Baker, R. (in press) Ethical Consideraions and Student Perceptions of Engagement Data in Learning Analytics. *Proceedings of the Hawaii International Conference on System Sciences.*

Svabensky, V., Tkacik, K., Birdwell, A., Weiss, R., Baker, R.S., Celeda, P., Vykopal, J., Mache, J., Chattopadhyay, A. (in press) Detecting Unsuccessful Students in Cybersecurity Exercises in Two Different Learning Environments. *Proceedings of the 2024 IEEE Frontiers in Education Conference (FIE).*

Stec, H., Richey, J.E., Nguyen, H., Else-Quest, N., Hammer, J., Baker, R.S., Arroyo, I., McLaren, B. (2025) Using a Multi-Dimensional Model of Gender to Assess Learning with Different Game-Based Learning Narratives. *Proceedings of Meaningful Play.*

Liu, X., Zhang, J., Barany, A., Pankiewicz, M., Baker, R.S. (2024) Assessing the Potential and Limits of Large Language Models in Qualitative Coding. *Proceedings of the International Conference on Quantitative Ethnography.*

Liu, X., Zambrano, A., Barany, A., Ocumpaugh, J., Ginger, J., Gadbury, M., Lane, H.C., Baker, R.S. (2024) Investigating Learner Interest and Observation Patterns in a Minecraft Virtual Astronomy Environment. *Proceedings of the International Conference on Quantitative Ethnography.*

Zambrano, A.F., Baker, R.S., Mehta, S., Barany, A. (2024) Epistemic Association Rule Networks: Incorporating Association Rule Mining into the Quantitative Ethnography Toolbox. *Proceedings of the International Conference on Quantitative Ethnography.*

Pankiewicz, M., Zambrano, A.F., Barany, A., Baker, R.S. (2024) How we Code Code: Leveraging GPT and Ordered Networks for Understanding Introductory Programming Education. *Proceedings of the International Conference on Quantitative Ethnography.* **[Nominated for Best Paper Award]**

Liu, X., Gurung, A., Baker, R.S., Barany, A. (2024) Understanding the Impact of Observer Effects on Student Affect. *Proceedings of the International Conference on Quantitative Ethnography.*

Liu, X., Slater, S., Swanson, L., Metcalf, S.J., Gagnon, D.J., Baker, R.S. (2024) Identifying When and Why Students Choose to Quit Jobs in a Science Exploration Game. To appear in *Proceedings of the 10th International Joint Conference on Serious Games, JCSG.*

Shah, M., Pankiewicz, M., Baker, R., Chi, J., Xin, Y., Shah, H., Fonseca, D. (2024) Students' Use of an LLM-powered Virtual Teaching Assistant for Recommending Educational Applications of Games. To appear in *Proceedings of the 10th International Joint Conference on Serious Games, JCSG.*

Baker, R.S., Hutt, S., Brooks, C.A., Srivastava, N., Mills, C. (2024) Open Science and Educational Data Mining: Which Practices Matter Most? *Proceedings of the 17th International Conference on Educational Data Mining.*

Singhal, S., Zambrano, A.F., Pankiewicz, M., Liu, X., Porter, C., Baker, R.S. (2024) De-Identifying Student Personally Identifying Information with GPT-4. *Proceedings of the 17th International Conference on Educational Data Mining.*

Zambrano, A.F., Baker, R.S., Baral, S., Heffernan, N., Lan, A. (2024) From Reaction to Anticipation: Predicting Future Affect. *Proceedings of the 17th International Conference on Educational Data Mining.*

Zhang, J., Borchers, C., Baker, R.S. (2024) Using Large Language Models to Detect Self-regulated Learning in Think-aloud Protocols. *Proceedings of the 17th International Conference on Educational Data Mining.*

Barany, A., Nasiar, N., Porter, C., Zambrano, A.F., Andres, J.M.A.L., Bright, D., Choi, J., Gao, S., Giordano, C., Liu, X., Mehta, S., Shah, M., Zhang, J., Baker, R.S. (2024) ChatGPT for Education Research: Exploring the Potential of Large Language Models for Qualitative Codebook Development. *Proceedings of the 25th International Conference on Artificial Intelligence in Education.*

Richey, J.E., Nguyen, H.A., Mehrvarz, M., Else-Quest, N., Arroyo, I., Baker, R.S., Stec, H., Hammer, J., McLaren, B. (2024) Understanding Gender Effects in Game-Based Learning: The Role of Self-Explanation. *Proceedings of the 25th International Conference on Artificial Intelligence in Education.*

Pankiewicz, M., Baker, R.S. (2024) Navigating Compiler Errors with AI Assistance: A Study of GPT Hints in an Introductory Programming Course. *Proceedings of the 29th annual ACM conference on Innovation and Technology in Computer Science Education (ITiCSE).*

Zambrano, A.F., Pankiewicz, M., Barany, A., Baker, R.S. (2024) Ordered Network Analysis in CS Education: Unveiling Patterns of Success and Struggle in Automated Programming Assessment. *Proceedings of the 29th annual ACM conference on Innovation and Technology in Computer Science Education (ITiCSE).*

Svabensky, V., Pankiewicz, M., Zhang, J., Cloude, E.B., Baker, R.S., Fouh, E. (2024) Comparison of Three Programming Error Measures for Explaining Variability in CS1 Grades. *Proceedings of the 29th annual ACM conference on Innovation and Technology in Computer Science Education (ITiCSE).*

Zambrano, A.F., Baker, R.S. (2024) Long-Term Prediction from Topic-Level Knowledge and Engagement. *Proceedings of the 14th International Conference on Learning Analytics and Knowledge (LAK24),* 66-77.

Zambrano, A.F., Zhang, J., Baker, R.S. (2024) Investigating Algorithmic Bias on Bayesian Knowledge Tracing and Carelessness Detectors. *Proceedings of the 14th International Conference on Learning Analytics and Knowledge (LAK24),* 349-359. **[Nominated for Best Paper Award]**

Hutt, S., DePiro, A., Wang, J., Rhodes, S., Baker, R.S., Hieb, G., Sethuraman, S., Ocumpaugh, J., Mills, C. (2024) Feedback on Feedback: Comparing Classic Natural Language Processing and Generative AI to Evaluate Peer Feedback. *Proceedings of the 14th International Conference on Learning Analytics and Knowledge (LAK24),* 55-65.

Belitz, C., Lee, H., Nasiar, N., Fancsali, S., Ritter, S., Almoubayyed, H., Baker, R.S., Ocumpaugh, J., Bosch, N. (2024) Hierarchical Dependencies in Classroom Settings Influence Algorithmic Bias Metrics. *Proceedings of the 14th International Conference on Learning Analytics and Knowledge (LAK24),* 210-218.

Cloude, E.B., Kumar, P., Baker, R.S., Fouh, E. (2024) Novice programmers inaccurately monitor the quality of their work and their peers' work in an introductory computer science course. *Proceedings of the 14th International Conference on Learning Analytics and Knowledge (LAK24),* 35-45.

Cloude, E.B., Munshi, A., Andres, J.M.A.L., Ocumpaugh, J., Baker, R.S., Biswas, G. (2024) Exploring Confusion and Frustration as Non-linear Dynamical Systems. *Proceedings of the 14th International Conference on Learning Analytics and Knowledge (LAK24),* 241-252.

Borchers, C., Zhang, J., Baker, R.S., Aleven, A. (2024) Using Think-Aloud Data to Understand Relations between Self-Regulation Cycle Characteristics and Student Performance in Intelligent Tutoring Systems. *Proceedings of the 14th International Conference on Learning Analytics and Knowledge (LAK24),* 529-539.

Cloude, E.B., Zhang, J., Baker, R.S., Fouh, E. (2024) Procrastination vs. Active Delay: How Students Prepare to Code in Introductory Programming. *Proceedings of the SIGCSE Technical Symposium 2024,* 214-220.

Nawaz, S., Mayle, K., Martens, G., Stein, R., Baker, R.S. (2023) Question Dosage in MOOCs – An Empirical Investigation. *Proceedings of ASCILITE 2023: 40th International Conference on Innovation, Practice and Research in the Use of Educational Technologies in Tertiary Education.*

Pankiewicz, M., Baker, R.S. (2023) Large Language Models (GPT) for automating feedback on programming assignments. To appear in *Proceedings of the 31st International Conference on Computers in Education.* **[Nominated for Best Paper Award]**

Maier, C., Slavin, I., Baker, R.S., Stalzer, S. (2023) Studying Memory Decay and Spacing within Knowledge Tracing. To appear in *Proceedings of the 31st International Conference on Computers in Education.*

Zambrano, A.F., Liu, X., Barany, A., Baker, R.S., Kim, J., Nasiar, N. (2023) From nCoder to ChatGPT: From Automated Coding to Refining Human Coding. *Proceedings of the International Conference on Quantitative Ethnography.* **[Nominated for Best Student Paper]**

Scianna, J., Liu, X., Slater, S., Baker, R.S. (2023) A Case for (Inter)Action: The Role of Log Data in QE. *Proceedings of the International Conference on Quantitative Ethnography.*

Liu, X., Hussein, B., Barany, A., Baker, R.S., Chen, B. (2023) Decoding Player Behavior: Analyzing Reasons for Player Quitting Using Log Data from Puzzle Game Baba Is You. *Proceedings of the International Conference on Quantitative Ethnography.*

Andres-Bray, J.M., Hutt, S., Baker, R.S. (2023) Exploring Cross-Country Prediction Model Generalizability in MOOCs. To appear in *Proceedings of ACM Learning @ Scale 2023.* **[Nominated for Best Paper Award]**

van Stee, E.G., Heath, T., Baker, R.S., Andres, J.M.A.L., Ocumpaugh, J. (2023) Help Seekers vs. Help Accepters: Understanding Student Engagement with a Mentor Agent. *Proceedings of the 24ᵗʰ International Conference on Artificial Intelligence in Education.*

Wong, A., Bryck, R., Hutt, S., Baker, R.S., Mills, C. (2023) Using a Webcam Based Eye-tracker to Understand Students' Thought Patterns and Reading Behaviors in Neurodivergent Classrooms. *Proceedings of the International Conference on Learning Analytics and Knowledge.*

Cloude, E., Baker, R.S., Fouh, E. (2023) Online help-seeking occurring in multiple computer-mediated conversations affects grades in an introductory programming course. *Proceedings of the International Conference on Learning Analytics and Knowledge.*

Rodrigues, T.B.S.F., de Souza, J.F., Bernardino, H.S., Baker, R.S. (2022) Towards Interpretability of Attention-Based Knowledge Tracing Models. *Anais do 33a Simpósio Brasileiro de Informática na Educação.*

Gagnon, D., Baker, R.S., Swanson, L., Spevecek, N., Andres, J.M.A.L., Harpstead, E., Scianna, J., Slater, S., & San Pedro, M.O.C.Z. (2022). Exploring players' experience of humor and snark in a grade 3-6 history practices game. *GLS 13.0 Conference Proceedings.*

Zhang, J., Andres, J.M.A.L., Hutt, S., Baker, R.S., Ocumpaugh, J., Mills, C., Brooks, J., Sethuraman, S., Young, T. (2022) Detecting SMART Model Cognitive Operations in Mathematical Problem-Solving Process. *Proceedings of the International Conference on Educational Data Mining.* **[Nominated for Best Paper Award]**

Nasiar, N., Baker, R.S., Li, J., Gong, W. (2022) How do A/B Testing and secondary data analysis on AIED systems influence future research? *Proceedings of the 23rd International Conference on Artificial Intelligence and Education.*

Wang, K., Ma, Z., Baker, R.S., Li, Y. (2022) Iterative Refinement of an AIS Rewards System. *Proceedings of the Adaptive Instructional Systems Conference.*

Zhang, J., Cunningham, T., Iyer, R., Baker, R., Fouh, E. (2022) Exploring the impact of voluntary practice and procrastination in an introductory programming course. *Proceedings of SIGCSE 2022: ACM Technical Symposium on Computer Science Education.*

Karumbaiah, S., Baker, R.S., Tao, Y., Liu, Z. (2022) How does Students' Affect in Virtual Learning Relate to Their Outcomes? A Systematic Review Challenging the Positive-Negative Dichotomy. *Proceedings of the 12th Annual Conference on Learning Analytics and Knowledge,* 24-33.

Andres. J.M.A.L., Hutt, S., Ocumpaugh, J., Baker, R.S., Nasiar, N., Porter, C. (2021) How Anxiety Affects Affect: A Quantitative Ethnographic Investigation using Affect Detectors and Data-Targeted Interviews. *Proceedings of the International Conference on Quantitative Ethnography.*

Fouh, E., Lee, W., Baker, R. (2021) Nudging students to reduce procrastination in office hours and forums. *Proceedings of the 25th International Conference on Information Visualization.*

Richey, J.E., Zhang, J., Das, R., Andres-Bray, J.M., Scruggs, R., Mogessie, M., Baker, R.S., McLaren, B.M. (2021) Gaming and Confrustion Explains Learning Advantages for a Math Digital Learning Game. *Proceedings of the International Conference on Artificial Intelligence and Education.* **[Nominated for Best Paper Award]**

Baker, R.S., Nasiar, N., Ocumpaugh, J.L., Hutt, S., Andres, J.M.A.L., Slater, S., Schofield, M., Moore, A., Paquette, L., Munshi, A., Biswas, G. (2021) Affect-Targeted Interviews for Understanding Student Frustration. *Proceedings of the International Conference on Artificial Intelligence and Education.* **[Won Best Paper Award]**

Adjei, S., Baker, R.S., Bahel, V. (2021) Seven-year Longitudinal Implications of Wheel Spinning and Productive Persistence. *Proceedings of the International Conference on Artificial Intelligence and Education.*

Karumbaiah, S., Lan, A., Nagpal, S., Baker, R.S., Botelho, A., Heffernan, N. (2021) Using Past Data to Warm Start Active Machine Learning: Does Context Matter? *Proceedings of the 11th International Conference on Learning Analytics and Knowledge,* 151-160. **[Nominated for Best Paper Award]**

Kia, F.S., Hatala, M., Baker, R.S., Teasley, S.D. (2021) Measuring Students' Self-Regulatory Phases in LMS with Behavior and Real-Time Self Report. *Proceedings of the 11th International Conference on Learning Analytics and Knowledge,* 259-268.

Bosch, N., Zhang, Y., Paquette, L., Baker, R.S., Ocumpaugh, J., Biswas, G. (2021) Students' Verbalized Metacognition during Computerized Learning. *Proceedings of ACM SIGCHI: Computer-Human Interaction.*

Shah, M., Snow, E., Baker, R.S., Gouveia, C. (2021) The Impact of HESI Compass on Nursing Students' Readiness for the NCLEX-RN. Paper presented at the *American Educational Research Association.*

Karumbaiah, S., Baker, R.S. (2020) Studying Affect Dynamics using Epistemic Networks. *Proceedings of the 2nd International Conference on Quantitative Ethnography,* 362-374. **[Nominated for Best Student Paper Award]**

Paquette, L., Grant, T., Zhang, Y., Biswas, G., Baker, R.S. (2020) Using epistemic networks to analyze self-regulated learning in an open-ended problem-solving environment. *Proceedings of the 2nd International Conference on Quantitative Ethnography*, 185-201.

Scruggs, R., Baker, R.S., McLaren, B.M. (2020) Extending Deep Knowledge Tracing: Inferring Interpretable Knowledge and Predicting Post System Performance. *Proceedings of the 28th International Conference on Computers in Education.* **[Nominated for Best Student Paper Award] [Nominated for Best Technical Design Award]**

Presnall, B., Baker, R.S. (2020) Mapping e-Learning Preparation to Training Objectives in a Multinational Exercise: A Q-Matrix Approach. *Proceedings of the Interservice/Industry Training, Simulation and Education Conference.*

Nawaz, S., Srivastava, N. Yu, J.H., Baker, R.S., Kennedy, G., Bailey, J. (2020) Analysis of Task Difficulty Sequences in a Simulation-based POE Environment. *Proceedings of the 21st International Conference on Artificial Intelligence in Education,* 423-436. **[Nominated for Best Paper Award]**

Munshi, A., Mishra, S., Zhang, N., Paquette, L., Ocumpaugh, J., Baker, R., Biswas, G. (2020) Modeling the Relationships between Basic and Achievement Emotions in Computer-Based Learning Environments. *Proceedings of the 21st International Conference on Artificial Intelligence in Education,* 411-422.

Wang, Y., Kai, S., Baker, R. (2020) Early Detection of Wheel-Spinning in ASSISTments. *Proceedings of the 21st International Conference on Artificial Intelligence in Education,* 574-585.

Ocumpaugh, J., Baker, R., Karumbaiah, S., Crossley, S., Labrum, M. (2020) Affective Sequences and Student Actions within Reasoning Mind. *Proceedings of the 21st International Conference on Artificial Intelligence in Education,* 437-447.

Henderson, N., Rowe, J., Paquette, L., Baker, R., Lester, J. (2020) Improving Affect Detection in Game-Based Learning with Multimodal Data Fusion. *Proceedings of the 21st International Conference on Artificial Intelligence in Education,* 228-239.

Baker, R., Ma, W., Zhao, Y., Wang, S., Ma, Z. (2020) The Results of Implementing Zone of Proximal Development on Learning Outcomes. *Proceedings of the 13th International Conference on Educational Data Mining*, 749-753.

Agarwal, D., Baker, R.S., Muraleedharan, A. (2020) Dynamic knowledge tracing through data driven recency weights. To appear in *Proceedings of the 13th International Conference on Educational Data Mining,* 725-729.

Jiang, Y., Almeda, M.V., Kai, S., Baker, R.S., Ostrow, K., Inventado, P.S., Scupelli, P. (2020) Single Template vs. Multiple Templates: Examining the Effects of Problem Format on Performance. *Proceedings of the International Conference on the Learning Sciences.*

Zhang, Y., Paquette, L., Baker, R., Ocumpaugh, J., Bosch, N., Munshi, A., Biswas, A. (2020) The relationship between confusion and metacognitive strategies in Betty's Brain. *Proceedings of the 10th International Conference on Learning Analytics and Knowledge,* 276-284.

Molenaar, I., Horvers, A., Dijkstra, R., Baker, R. (2020) Personalized Visualizations to Promote Young Learners' SRL. *Proceedings of the 10th International Conference on Learning Analytics and Knowledge,* 330-339.

Karumbaiah, S., Baker, R.S., Barany, A., Shute, V. (2019) Using Epistemic Networks with Automated Codes to Understand Why Players Quit Levels in a Learning Game. *Proceedings of the 1st International Conference on Quantitative Ethnography,* 106-116.

Almeda, M.V., Rowe, E., Asbell-Clarke, J., Scruggs, R., Baker, R., Bardar, E., Gasca, S. (2019) Modeling Implicit Computational Thinking in Zoombinis Mudball Wall Puzzle Gameplay. *Proceedings of the 2019 Technology, Mind, and Society Conference.*

Karumbaiah, S., Baker, R.S., Ocumpaugh, J. (2019) The Case of Self-Transitions in Affective Dynamics. *Proceedings of the 20th International Conference on Artificial Intelligence in Education,* 172-181.

Richey, J.E., McLaren, B.M., Andres-Bray, J.M.L., Mogessie, M., Scruggs, R., Baker, R.S., Star, J.R. (2019) Confrustion in Learning from Erroneous Examples: Does Type of Prompted Self-Explanation Make a Difference? *Proceedings of the 20th International Conference on Artificial Intelligence in Education,* 445-457.

Henderson, N., Rowe, J., Mott, B., Brawner, K., Baker, R., Lester, J. (2019) 4D Affect Detection: Improving Frustration Detection in Game-based Learning with Posture-based Temporal Data Fusion. *Proceedings of the 20th International Conference on Artificial Intelligence in Education,* 144-156.

Karumbaiah, S., Ocumpaugh, J., Baker, R.S. (2019) The Influence of School Demographics on the Relationship Between Students' Help-Seeking Behavior and Performance and Motivational Measures. *Proceedings of the 12th International Conference on Educational Data Mining*, 99-108.

Gardner, J., Yang, Y., Baker, R., Brooks, C. (2019) Modeling and Experimental Design for MOOC Dropout Prediction: A Replication Perspective. *Proceedings of the 12th International Conference on Educational Data Mining*, 49-58.

Yang, T-Y., Studer, C., Baker, R., Heffernan, N., Lan, A. (2019) Active Learning for Student Affect Detection. *Proceedings of the 12th International Conference on Educational Data Mining,* 208-217.

Aleven, V., Sewall, J., Andres-Bray, J.M., Popescu, O., Sottilare, R., Long, R., Baker, R. (2019) Towards Deeper Integration of Intelligent Tutoring Systems: One-way Student Model Sharing

between GIFT and CTAT. *Proceedings of the 7th Annual Generalized Intelligent Framework for Tutoring (GIFT) Users Symposium.*

Crossley, S., Karumbaiah, S., Ocumpaugh, J., Labrum, M., Baker, R. (2019) Predicting math success in an online tutoring system using language data and click-stream variables: A longitudinal analysis. *Proceedings of the 2nd Biennial Conference on Language, Data, and Knowledge.*

Andres, J.M.A.L., Ocumpaugh, J., Baker, R., Slater, S., Paquette, L., Jiang, Y., Bosch, N., Munshi, A., Moore, A., Biswas, G. (2019) Affect Sequences and Learning in Betty's Brain. *Proceedings of the International Conference on Learning Analytics and Knowledge,* 383-390.

Gardner, J., Brooks, C., Baker, R. (2019) Evaluating the Fairness of Predictive Student Models Through Slicing Analysis. *Proceedings of the International Conference on Learning Analytics and Knowledge*, 225-234. **[Best Paper Award]**

Molenaar, I., Horvers, A., Dijkstra, R., Baker, R.S. (2019) Towards Hybrid Human-System Regulation: Understanding Childrens' SRL Support Needs in Blended Classrooms. *Proceedings of the International Conference on Learning Analytics and Knowledge,* 471-480.

Baker, R.S., Gowda, S.M., Salamin, E. (2018) Modeling the Learning That Takes Place Between Online Assessments. *Proceedings of the 26th International Conference on Computers in Education*, 21-28.

Karumbaiah, S., Andres, J.M.A.L., Botelho, A.F., Baker, R.S., Ocumpaugh, J. (2018) The Implications of a Subtle Difference in the Calculation of Affect Dynamics. *Proceedings of the 26th International Conference on Computers in Education,* 29-38. **[Nominated for Best Paper Award]**

Munshi, A., Rajendran, R., Ocumpaugh, J., Biswas, G., Baker, R., Paquette, L. (2018) Modeling Learners' Cognitive and Affective States to Scaffold SRL in Open-Ended Learning Environments. *Proceedings of the 25th Conference on User Modeling, Adaptation, and Personalization,* 131-138.

Botelho, A.F., Baker, R., Ocumpaugh, J., Heffernan, N. (2018) Studying Affect Dynamics and Chronometry Using Sensor-Free Detectors. *Proceedings of the 11th International Conference on Educational Data Mining,* 157-166. **[Best Student Paper Award] [Nominated for Best Paper Award]**

Karumbaiah, S., Baker, R.S., Shute, V. (2018) Predicting Quitting in Students Playing a Learning Game. *Proceedings of the 11th International Conference on Educational Data Mining,* 21-31. **[Nominated for Best Paper Award]**

Crossley, S. Ocumpaugh, J., Labrum, M., Bradfield, F., Dascalu, M., Baker, R.S. (2018) Modeling Math Identity and Math Success Through Sentiment Analysis and Linguistic Features. *Proceedings of the 11th International Conference on Educational Data Mining,* 11-20.

Agarwal, D., Babel, N., Baker, R. (2018) Contextual Derivation of Stable BKT Parameters for Analysing Content Efficacy. *Proceedings of the 11th International Conference on Educational Data Mining,* 596-601.

Gardner, J., Brooks, C., Andres, J.M., Baker, R. (2018) Replicating MOOC Predictive Models at Scale. *Proceedings of the 4th Annual ACM Conference on Learning at Scale,* Article Number 1.

Jiang, Y., Bosch, N., Baker, R., Paquette, L., Ocumpaugh, J., Andres, J.M.A.L., Moore, A.L., Biswas, G. (2018) Expert Feature-Engineering vs. Deep Neural Networks: Which is Better for Sensor-Free Affect Detection? *Proceedings of the 19th International Conference on Artificial Intelligence in Education*, 198-211. **[Best Student Paper Award] [Nominated for Best Paper Award]**

Okur, E., Aslan, S., Alyuz, N., Esme, A.A., Baker, R.S. (2018) Role of Socio-Cultural Differences in Labeling Students' Affective States. *Proceedings of the 19th International Conference on Artificial Intelligence in Education,* 367-380.

Mojarad, S., Mojarad, S., Essa, A., Baker, R. (2018) Data-Driven Learner Profiling Based on Clustering Student Behaviors: Learning Consistency, Pace, and Effort. *Proceedings of the 14th International Conference on Intelligent Tutoring Systems,* 130-139.

Aslan, S., Okur, E., Alyuz, N., Esme, A.A., Baker, R.S. (2018) Human Expert Labeling Process: Valence-Arousal Labeling for Students' Affective States. *Proceedings of the 8th International Conference in Methodologies and Intelligent Systems for Technology Enhanced Learning.*

Andres, J.M.L., Baker, R.S., Gasevic, D., Siemens, G., Crossley, S.A., Joksimovic, S.(2018) Studying MOOC Completion at Scale Using the MOOC Replication Framework. In *Proceedings of the International Conference on Learning Analytics and Knowledge,* 71-78.

Mojarad, S., Essa, A., Mojarad, S., Baker, R. (2018) Studying Adaptive Learning Efficacy using Propensity Score Matching. In *Proceedings of the International Conference on Learning Analytics and Knowledge.*

Xie, J., Mojarad, S., Shubeck, K., Essa, A., Baker, R., Hu, X. (2017) Student Learning Strategies to Predict Success in an Online Adaptive Mathematics Tutoring System. *Proceedings of the 10th International Conference on Educational Data Mining*, 460-465.

Botelho, A.F., Baker, R., Heffernan, N. (2017) Improving Sensor-Free Affect Detection Using Deep Learning. *Proceedings of the 18th International Conference on Artificial Intelligence in Education*, 40-51.

Ocumpaugh, J., Andres, J.M.L., Baker, R., DeFalco, J., Paquette, L., Rowe, J., Mott, B., Lester, J., Georgoulas, V., Brawner, K., Sottilare, R. (2017) Affect Dynamics in Military Trainees. *Proceedings of the 18th International Conference on Artificial Intelligence in Education*, 238-249.

Paquette, L., Baker, R.S. (2017) Variations of Gaming Behaviors Across Populations of Students and Across Learning Environments. *Proceedings of the 18th International Conference on Artificial Intelligence in Education,* 274-286.

Riedesel, M.A., Zimmerman, N., Baker, R., Titchener, T., Cooper, J. (2017) Using a model for learning and memory to simulate learner response in spaced practice. *Proceedings of the 18th International Conference on Artificial Intelligence in Education,* 644-649.

Aleven, V., Baker, R., Sewall, J., Andres, J.M.L., Wang, Y., Popescu, O., Blomberg, N. (2017) Integrating MOOCs and Intelligent Tutoring Systems: edX, GIFT, and CTAT. *Proceedings of the 5th Annual GIFT Users Symposium*.

Ocumpaugh, J., Baker, R., Slater, S., San Pedro, M.O., Heffernan, N, Heffernan, C., Hawn, A. (2017) Guidance Counselor Reports of the Assistments College Prediction Model (ACPM). *Proceedings of the International Conference on Learning Analytics and Knowledge*, 479-488. **[Nominated for Best Paper Award]**

Crossley, S., Dascalu, M., McNamara, D., Baker, R., Trausan-Matu, S. (2017) Predicting Success in Massive Open Online Courses (MOOC) Using Cohesion Network Analysis. *Proceedings of the 12th International Conference on Computer-Supported Collaborative Learning,* 103-110.

Slater, S., Ocumpaugh, J., Baker, R., Scupelli, P., Inventado, P.S., Heffernan, N. (2016) Semantic Features of Math Problems: Relationships to Student Learning and Engagement. *Proceedings of the 9th International Conference on Educational Data Mining,* 223-230.

Ma, Y., Agnihotri, L., Baker, R., Mojarad, S. (2016) Effect of student ability and question difficulty on duration. *Proceedings of the 9th International Conference on Educational Data Mining,* 135-142. **[Named Exemplary Paper]**

Liu, Z., Brown, R., Lynch, C., Barnes, T., Baker, R., Bergner, Y., McNamara, D. (2016) MOOC Learner Behaviors by Country and Culture: an Exploratory Analysis. *Proceedings of the 9th International Conference on Educational Data Mining,* 127-134.

Eagle, M., Corbett, A., Stamper, J., McLaren, B., Baker, R.S. (2016) Predicting Individual Differences for Learner Modeling in Intelligent Tutors from Previous Learner Activities. *Proceedings of the 24th Conference on User Modeling, Adaptation, and Personalization,* 55-63. **[Won Best Paper Award]**

Bosch, N., D'Mello, S. K., Baker, R. S., Ocumpaugh, J., Shute, V. J., Ventura, M., Wang, L., & Zhao, W. (2016) Detecting student emotions in computer-enabled classrooms. *Proceedings of the 25th International Joint Conference on Artificial Intelligence (IJCAI 2016)*, 4125-4129.

DeFalco, J.A., Georgoulas, V., Paquette, L., Baker, R.S., Rowe, J., Mott, B., Lester, J. (2016) Motivational Feedback Messages as Interventions to Frustration in GIFT. *Proceedings of the GIFT Users Symposium (GIFTSym).*

D'Mello, S.K., Bosch, N., Kai, S., Paquette, L., Baker, R., Ocumpaugh, J., Shute, V.J. (2016) Automatic Objective Measurement of Student Emotions in Computer-Enabled Classrooms. Paper presented at the *2016 Annual Meeting of the American Educational Research Association.*

Crossley, S., Paquette, L., Dascalu, M., McNamara, D., Baker, R. (2016) Combining Click-Stream Data with NLP Tools to Better Understand MOOC Completion. *Proceedings of the 6th International Conference on Learning Analytics and Knowledge*, 6-14.

Zhu, M., Bergner, Y., Zhang, Y., Baker, R., Wang, Y., Paquette, L., Barnes, T. (2016) Longitudinal Engagement, Performance, and Social Connectivity: a MOOC Case Study Using Exponential Random Graph Models. *Proceedings of the 6th International Conference on Learning Analytics and Knowledge,* 223-230.

Bosch, N., Chen, H., Baker, R., Shute, V., D'Mello, S. (2015) Accuracy vs. Availability Heuristic in Multimodal Affect Detection in the Wild. *Proceedings of the 17th International Conference on Multimodal Interaction,* 267-274.

Andres, J.M.A., Andres, J.M., Rodrigo, M.M.T., Baker, R.S., Beck, J.B. (2015) An investigation of eureka and the affective states surrounding eureka moments. *Proceedings of the International Conference on Computers in Education,* 103-105.

Asbell-Clarke, J., Rowe, E., Bardar, E., Eagle, M., Brown, R., Baker, R., Barnes, T., Edwards, T. (2015) Leveling Up: Measuring and Leveraging Implicit STEM Learning in Games. Paper presented at the *11th Annual Conference on Games+Learning+Society.*

Ocumpaugh, J., Baker, R.S., Rodrigo, M.M.T., Salvi, A. van Velsen, M., Aghababyan, A., Martin, T. (2015). HART: The Human Affect Recording Tool. *Proceedings of the ACM Special Interest Group on the Design of Communication (SIGDOC).*

Paquette, L., Rowe, J., Baker, R.S., Mott, B., Lester, J., DeFalco, J., Brawner, K., Sottilare, R., Georgoulas, V. (2015) Sensor-Free or Sensor-Full: A Comparison of Data Modalities in Multi-Channel Affect Detection. *Proceedings of the 8th International Conference on Educational Data Mining,* 93-100.

Kai, S., Paquette, L., Baker, R.S., Bosch, N., D'Mello, S., Ocumpaugh, J., Shute, V., Ventura, M. (2015) A Comparison of Face-based and Interaction-based Affect Detectors in Physics Playground. *Proceedings of the 8th International Conference on Educational Data Mining,* 77-84. **[Won Best Student Paper Award] [Nominated for Best Paper Award]**

Jiang, Y., Paquette, L., Baker, R.S., Clarke-Midura, J. (2015) Comparing Novice and Experienced Students in Virtual Performance Assessments. *Proceedings of the 8th International Conference on Educational Data Mining,* 136-143.

San Pedro, M.O., Snow, E., Baker, R.S., McNamara, D., Heffernan, N. (2015) Exploring Dynamic Assessments of Affect, Behavior, and Cognition and Math State Test Achievement. *Proceedings of the 8th International Conference on Educational Data Mining,* 85-92.

Paquette, L., Baker, R.S., de Carvalho, A., Ocumpaugh, J. (2015) Cross-System Transfer of Machine Learned and Knowledge Engineered Models of Gaming the System. *Proceedings of the 22nd International Conference on User Modeling, Adaptation, and Personalization,* 183-194.

Bosch, N., D'Mello, S., Baker, R., Ocumpaugh, J., & Shute, V. (2015). Temporal Generalizability of Face-Based Affect Detection in Noisy Classroom Environments. *Proceedings of the 17th International Conference on Artificial Intelligence in Education,* 44-53. **[Won Best Paper Award]**

Bosch, N., D'Mello, S., Baker, R., Ocumpaugh, J., Shute, V., Ventura, M., Wang, L., & Zhao, W. (2015). Automatic Detection of Learning-Centered Affective States in the Wild. *Proceedings of the 2015 International Conference on Intelligent User Interfaces (IUI 2015),* 379-388. **[Honorable Mention for Best Paper Award]**

Kovanovic, V., Gasevic, D., Dawson, S., Joksimovic, S., Baker, R.S., Hatala, M. (2015) Penetrating the Black Box of Time-on-task Estimation. *Proceedings of the 5th International Learning Analytics and Knowledge Conference*, 184-193. **[Won Best Technical Paper Award]**

Paquette, L., de Carvalho, A.M.J.A., Baker, R.S. (2014) Towards Understanding Expert Coding of Student Disengagement in Online Learning. *Proceedings of the 36th Annual Cognitive Science Conference*, 1126-1131.

Bazaldua, D.A.L., Baker, R.S., San Pedro, M.O.Z. (2014) Combining Expert and Metric-Based Assessments of Association Rule Interestingness. *Proceedings of the 7th International Conference on Educational Data Mining*, 44-51.

Baker, R.S., Ocumpaugh, J., Gowda, S.M., Kamarainen, A., Metcalf, S.J. (2014) Extending Log-Based Affect Detection to a Multi-User Virtual Environment for Science. *Proceedings of the 22nd Conference on User Modelling, Adaptation, and Personalization*, 290-300.

Paquette, L., Baker, R.S., Sao Pedro, M.A., Gobert, J.D., Rossi, L., Nakama, A., Kauffman-Rogoff, Z. (2014) Sensor-Free Affect Detection for a Simulation-Based Science Inquiry Learning Environment. *Proceedings of the 12th International Conference on Intelligent Tutoring Systems,* 1-10.

Sao Pedro, M., Jiang, Y., Paquette, L., Baker, R.S., Gobert, J. (2014) Identifying Transfer of Inquiry Skills across Physical Science Simulations using Educational Data Mining. *Proceedings of the 11th International Conference of the Learning Sciences*.

Sao Pedro, M., Gobert, J., Baker, R. (2014) The Impacts of Automatic Scaffolding on Students' Acquisition of Data Collection Inquiry Skills. Paper presented at the *2014 Annual Meeting of the American Educational Research Association.*

Hawkins, W., Heffernan, N., Baker, R.S.J.d. (2013) Which is more responsible for boredom in intelligent tutoring systems: students (trait) or problems (state)? *Proceedings of the 5th biannual Conference on Affective Computing and Intelligent Interaction.*

San Pedro, M.O.Z., Baker, R.S.J.d., Bowers, A.J., Heffernan, N.T. (2013) Predicting College Enrollment from Student Interaction with an Intelligent Tutoring System in Middle School. *Proceedings of the 6th International Conference on Educational Data Mining*, 177-184.

Hershkovitz, A., Baker, R.S.J.d., Gowda, S.M., Corbett, A.T. (2013) Predicting Future Learning Better Using Quantitative Analysis of Moment-by-Moment Learning. *Proceedings of the 6th International Conference on Educational Data Mining*, 74-81.

Sao Pedro, M.A., Baker, R.S.J.d., Gobert, J.D. (2013) Incorporating Scaffolding and Tutor Context into Bayesian Knowledge Tracing to Predict Inquiry Skill Acquisition. *Proceedings of the 6th International Conference on Educational Data Mining*, 185-192.

Liu, Z., Pataranutaporn, V., Ocumpaugh, J., Baker, R.S.J.d. (2013) Sequences of Frustration and Confusion, and Learning. *Proceedings of the 6th International Conference on Educational Data Mining*, 114-120.

Hawkins, W., Heffernan, N.T., Wang, Y., Baker, R.S.J.d. (2013) Extending the Assistance Model: Analyzing the Use of Assistance over Time. *Proceedings of the 6th International Conference on Educational Data Mining*, 59-66.

San Pedro, M.O.Z., Baker, R.S.J.d., Gowda, S.M., Heffernan, N.T. (2013) Towards an Understanding of Affect and Knowledge from Student Interaction with an Intelligent Tutoring System. *Proceedings of the 16th International Conference on Artificial Intelligence and Education*, 41-50.

Doddannara, L., Gowda, S., Baker, R.S.J.d., Gowda, S., de Carvalho, A.M.J.B. (2013) Exploring the relationships between design, students' affective states, and disengaged behaviors within an ITS. *Proceedings of the 16th International Conference on Artificial Intelligence and Education*, 31-40.

Corbett, A., MacLaren, B., Wagner, A., Kauffman, L., Mitchell, A., Baker, R.S.J.d. (2013) Differential Impact of Learning Activities Designed to Support Robust Learning in the Genetics Cognitive Tutor. *Proceedings of the 16th International Conference on Artificial Intelligence and Education*, 319-328.

Baker, R.S.J.d., Clarke-Midura, J. (2013) Predicting Successful Inquiry Learning in a Virtual Performance Assessment for Science. *Proceedings of the 21st International Conference on User Modeling, Adaptation, and Personalization*, 203-214.

Pardos, Z.A., Baker, R.S.J.d., San Pedro, M.O.C.Z., Gowda, S.M., Gowda, S.M. (2013) Affective states and state tests: Investigating how affect throughout the school year predicts end of year learning outcomes. *Proceedings of the 3rd International Conference on Learning Analytics and Knowledge,* 117-124.

Baker, R.S.J.d., Gowda, S., Corbett, A., Ocumpaugh, J. (2012) Towards Automatically Detecting Whether Student Learning is Shallow. *Proceedings of the International Conference on Intelligent Tutoring Systems,* 444-453. **[Won Best Paper Award]**

Sao Pedro, M., Baker, R.S.J.d., Gobert, J. (2012) Improving Construct Validity Yields Better Models of Systematic Inquiry, Even with Less Information. *Proceedings of the 20th International Conference on User Modeling, Adaptation and Personalization (UMAP 2012)*, 249-260. **[Won James Chen Best Student Paper Award]**

Sao Pedro, M.A., Gobert, J., Baker, R.S.J.d. (2012) The Development and Transfer of Data Collection Inquiry Skills across Physical Science Microworlds. Paper presented at the *American Educational Research Association Conference*. **[Won Best Student Paper Award, AERA SIG-ATL]**

Baker, R.S.J.d., Gowda, S.M., Wixon, M., Kalka, J., Wagner, A.Z., Salvi, A., Aleven, V., Kusbit, G., Ocumpaugh, J., Rossi, L. (2012) Sensor-free automated detection of affect in a Cognitive Tutor for Algebra. *Proceedings of the 5th International Conference on Educational Data Mining,* 126-133. **[Winner, 2024 Prof. Ram Kumar Educational Data Mining Test of Time Award]**

Ogan, A., Walker, E., Baker, R.S.J.d., de Carvalho, A., Laurentino, T., Rebolledo-Mendez, G., Castro, M.J. (2012) Collaboration in Cognitive Tutor Use in Latin America: Field Study and

Design Recommendations. *Proceedings of ACM SIGCHI: Computer-Human Interaction*, 1381-1390.

Wixon, M., Baker, R.S.J.d., Gobert, J., Ocumpaugh, J., Bachmann, M. (2012) WTF? Detecting Students who are Conducting Inquiry Without Thinking Fastidiously. *Proceedings of the 20th International Conference on User Modeling, Adaptation and Personalization (UMAP 2012),* 286-298.

Hershkovitz, A., Baker, R.S.J.d., Gobert, J., Nakama, A. (2012) A Data-driven Path Model of Student Attributes, Affect, and Engagement in a Computer-based Science Inquiry Microworld. *Proceedings of the International Conference on the Learning Sciences.*

Gowda, S., Pardos, Z., Baker, R.S.J.d. (2012) Content Learning Analysis Using the Moment-By-Moment Learning Detector. *Proceedings of the International Conference on Intelligent Tutoring Systems,* 434-443.

Hershkovitz, A., Baker, R.S.J.d., Gobert, J., Kauffman-Rogoff, Z., Wixon, M. (2012) Student Attributes, Affective States, and Engagement in Science Inquiry Microworlds. Paper presented at *The European Association for Research on Learning and Instruction (EARLI) SIG 20 Conference.*

Baker, R.S.J.d., Gowda, S., Corbett, A.T. (2011) Towards predicting future transfer of learning. *Proceedings of 15th International Conference on Artificial Intelligence in Education*, 23-30.
[Finalist for Best Paper Award]

Baker, R.S.J.d., Gowda, S.M., Corbett, A.T. (2011) Automatically Detecting a Student's Preparation for Future Learning: Help Use is Key. *Proceedings of the 4th International Conference on Educational Data Mining*, 179-188.

Baker, R.S.J.d., Moore, G., Wagner, A., Kalka, J., Karabinos, M., Ashe, C., Yaron, D. (2011) The Dynamics Between Student Affect and Behavior Occuring Outside of Educational Software. *Proceedings of the 4th bi-annual International Conference on Affective Computing and Intelligent Interaction.*

Lee, D.M., Rodrigo, M.M., Baker, R.S.J.d., Sugay, J., Coronel, A. (2011) Exploring the Relationship Between Novice Programmer Confusion and Achievement. *Proceedings of the 4th bi-annual International Conference on Affective Computing and Intelligent Interaction*.

San Pedro, M.O.C., Rodrigo, M.M., Baker, R.S.J.d. (2011) The Relationship between Carelessness and Affect in a Cognitive Tutor. *Proceedings of the 4th bi-annual International Conference on Affective Computing and Intelligent Interaction*.

Corbett, A., MacLaren, B., Wagner, A., Kauffman, L., Mitchell, A., Baker, R.S.J.d., Gowda, S.M. (2011) Preparing Students for Effective Explaining of Worked Examples in the Genetics Tutor. *Proceedings of the 33rd Annual Meeting of the Cognitive Science Society*, 1476-1481.

Baker, R.S.J.d., Pardos, Z., Gowda, S., Nooraei, B., Heffernan, N. (2011) Ensembling Predictions of Student Knowledge within Intelligent Tutoring Systems. *Proceedings of the 19th International Conference on User Modeling, Adaptation, and Personalization*, 13-24.

Pardos, Z. A., Gowda, S. M., Baker, R.S.J.d., Heffernan, N. T. (2011) Ensembling Predictions of Student Post-Test Scores for an Intelligent Tutoring System. *Proceedings of the 4th International Conference on Educational Data Mining*, 189-198.

Gowda, S.M., Rowe, J.P., Baker, R.S.J.d., Chi, M., Koedinger, K.R. (2011) Improving Models of Slipping, Guessing, and Moment-by-Moment Learning with Estimates of Skill Difficulty. *Proceedings of the 4th International Conference on Educational Data Mining*, 199-208.

Nooraei, B.B., Pardos, Z.A., Heffernan, N.T., Baker, R.S.J.d. (2011) Less is More: Improving the Speed and Prediction Power of Knowledge Tracing by Using Less Data. *Proceedings of the 4th International Conference on Educational Data Mining*, 101-109.

San Pedro, M.O.C., Baker, R., Rodrigo, M.M. (2011) Detecting Carelessness through Contextual Estimation of Slip Probabilities among Students Using an Intelligent Tutor for Mathematics. To appear in *Proceedings of 15th International Conference on Artificial Intelligence in Education*, 304-311.

Baker, R.S.J.d., Corbett, A.T., Gowda, S.M., Wagner, A.Z., MacLaren, B.M., Kauffman, L.R., Mitchell, A.P., Giguere, S. (2010) Contextual Slip and Prediction of Student Performance After Use of an Intelligent Tutor. *Proceedings of the 18th Annual Conference on User Modeling, Adaptation, and Personalization,* 52-63. **[Finalist for Best Paper Award]**

Baker, R.S.J.d., Mitrovic, A., Mathews, M. (2010) Detecting Gaming the System in Constraint-Based Tutors. *Proceedings of the 18th Annual Conference on User Modeling, Adaptation, and Personalization,* 267-278.

Baker, R.S.J.d., Goldstein, A.B., Heffernan, N.T. (2010) Detecting the Moment of Learning. *Proceedings of the 10th Annual Conference on Intelligent Tutoring Systems*, 25-34. **[People's Choice Award for Best Oral Presentation] [Finalist for Best Paper Award]**

Baker, R.S.J.d., Gowda, S.M. (2010) An Analysis of the Differences in the Frequency of Students' Disengagement in Urban, Rural, and Suburban High Schools. *Proceedings of the 3rd International Conference on Educational Data Mining,* 11-20.

Sao Pedro, M. A., Baker, R.S.J.d., Montalvo, O., Nakama, A., Gobert, J.D. (2010) Using Text Replay Tagging to Produce Detectors of Systematic Experimentation Behavior Patterns. *Proceedings of the 3rd International Conference on Educational Data Mining*, 181-190.

Montalvo, O., Baker, R.S.J.d., Sao Pedro, M.A., Nakama, A., Gobert, J.D. (2010) Identifying Student' Inquiry Planning Using Machine Learning. *Proceedings of the 3rd International Conference on Educational Data Mining*, 141-150.

Baker, R.S.J.d., de Carvalho, A.M.J.A., Raspat, J., Aleven, V., Corbett, A.T., Koedinger, K.R. (2009) Educational Software Features that Encourage and Discourage "Gaming the System". *Proceedings of the 14th International Conference on Artificial Intelligence in Education,* 475-482. **[Honorable Mention for Best Paper Award]**

Baker, R.S.J.d. (2009) Differences Between Intelligent Tutor Lessons, and the Choice to Go Off-Task. *Proceedings of the 2nd International Conference on Educational Data Mining,* 11-20.

Rodrigo, M.M.T., Baker, R.S.J.d. (2009) Coarse-Grained Detection of Student Frustration in an Introductory Programming Course. *Proceedings of ICER 2009: the International Computing Education Workshop.*

Rodrigo, M.M.T., Baker, R.S., Jadud, M.C., Amarra, A.C.M., Dy, T., Espejo-Lahoz, M.B.V., Lim, S.A.L., Pascua, S.A.M.S., Sugay, J.O., Tabanao, E.S. (2009) Affective and Behavioral Predictors of Novice Programmer Achievement. *Proceedings of the 14th ACM-SIGCSE Annual Conference on Innovation and Technology in Computer Science Education,* 156-160.

Prata, D.N., Baker, R.S.J.d., Costa, E., Rosé, C.P., Cui, Y., de Carvalho, A.M.J.B. (2009) Detecting and Understanding the Impact of Cognitive and Interpersonal Conflict in Computer Supported Collaborative Learning Environments. *Proceedings of the 2nd International Conference on Educational Data Mining,* 131-140.

Cocea, M., Hershkovitz, A., Baker, R.S.J.d. (2009) The Impact of Off-task and Gaming Behaviors on Learning: Immediate or Aggregate? *Proceedings of the 14th International Conference on Artificial Intelligence in Education,* 507-514.

Baker, R.S.J.d., Corbett, A.T., Aleven, V. (2008) Improving Contextual Models of Guessing and Slipping with a Truncated Training Set. *Proceedings of the 1st International Conference on Educational Data Mining*, 67-76.

Baker, R.S.J.d., de Carvalho, A. M. J. A. (2008) Labeling Student Behavior Faster and More Precisely with Text Replays. *Proceedings of the 1st International Conference on Educational Data Mining*, 38-47.

Baker, R.S.J.d., Corbett, A.T., Aleven, V. (2008) More Accurate Student Modeling Through Contextual Estimation of Slip and Guess Probabilities in Bayesian Knowledge Tracing. *Proceedings of the 9th International Conference on Intelligent Tutoring Systems,* 406-415.

Rodrigo, M.M.T., Baker, R.S.J.d., d'Mello, S., Gonzalez, M.C.T., Lagud, M.C.V., Lim, S.A.L., Macapanpan, A.F., Pascua, S.A.M.S., Santillano, J.Q., Sugay, J.O., Tep, S., Viehland, N.J.B. (2008) Comparing Learners' Affect While Using an Intelligent Tutoring Systems and a Simulation Problem Solving Game. *Proceedings of the 9th International Conference on Intelligent Tutoring Systems,* 40-49.

Rodrigo, M.M.T., Anglo, E.A., Sugay, J.O., Baker, R.S.J.d. (2008) Use of Unsupervised Clustering to Characterize Learner Behaviors and Affective States while Using an Intelligent Tutoring System. *Proceedings of International Conference on Computers in Education.*

Rodrigo, M.M.T., Rebolledo-Mendez, G., Baker, R.S.J.d., du Boulay, B., Sugay, J.O., Lim, S.A.L., Espejo-Lahoz, M.B., Luckin, R. (2008) The Effects of Motivational Modeling on Affect in an Intelligent Tutoring System. *Proceedings of International Conference on Computers in Education.*

Baker, R.S.J.d. (2007) Modeling and Understanding Students' Off-Task Behavior in Intelligent Tutoring Systems. *Proceedings of ACM CHI 2007: Computer-Human Interaction,* 1059-1068.
[Honorable Mention for Best Paper Award]

Baker, R.S.J.d., Rodrigo, M.M.T., Xolocotzin, U.E. (2007) The Dynamics of Affective Transitions in Simulation Problem-Solving Environments. *Proceedings of the Second International Conference on Affective Computing and Intelligent Interaction.*

Baker, R.S.J.d., Habgood, M.P.J., Ainsworth, S.E., Corbett, A.T. (2007) Modeling the Acquisition of Fluent Skill in Educational Action Games. *Proceedings of User Modeling 2007,* 17-26.

Rodrigo, M.M.T., Baker, R.S.J.d., Lagud, M.C.V., Lim, S.A.L., Macapanpan, A.F., Pascua, S.A.M.S., Santillano, J.Q., Sevilla, L.R.S., Sugay, J.O., Tep, S., Viehland, N.J.B. (2007) Affect and Usage Choices in Simulation Problem Solving Environments. *Proceedings of Artificial Intelligence in Education 2007,* 145-152.

Baker, R.S.J.d., Corbett, A.T., Koedinger, K.R., Evenson, S.E., Roll, I., Wagner, A.Z., Naim, M., Raspat, J., Baker, D.J., Beck, J. (2006) Adapting to When Students Game an Intelligent Tutoring System. *Proceedings of the 8th International Conference on Intelligent Tutoring Systems*, 392-401. **[Won Best Paper Award]**

Baker, R.S.J.d., Corbett, A.T., Koedinger, K.R., Roll, I. (2006) Generalizing Detection of Gaming the System Across a Tutoring Curriculum. *Proceedings of the 8th International Conference on Intelligent Tutoring Systems*, 402-411. **[Finalist for Best Paper Award]**

Roll, I., Aleven, V., McLaren, B.M., Ryu, E., Baker, R.S.J.d., Koedinger, K.R. (2006) The Help Tutor: Does Metacognitive Feedback Improve Students' Help-Seeking Actions, Skills, and Learning? *Proceedings of the 8th International Conference on Intelligent Tutoring Systems*, 360-369.

Baker, R.S., Roll, I., Corbett, A.T., Koedinger, K.R. (2005) Do Performance Goals Lead Students to Game the System? *Proceedings of the International Conference on Artificial Intelligence and Education (AIED2005)*, 57-64. **[Finalist for Best Paper Award]**

Fogarty, J., Baker, R., Hudson, S. (2005) Case Studies in the use of ROC Curve Analysis for Sensor-Based Estimates in Human Computer Interaction. *Proceedings of Graphics Interface (GI 2005)*, 129-136.

Roll, R., Baker, R., Aleven, V., McLaren, B., Koedinger, K. (2005) Modeling Students' Metacognitive Errors in Two Intelligent Tutoring Systems. *Proceedings of User Modeling 2005*, 367-376.

Baker, R.S., Corbett, A.T., Koedinger, K.R. (2004) Detecting Student Misuse of Intelligent Tutoring Systems. *Proceedings of the 7th International Conference on Intelligent Tutoring Systems*, 531-540.

Baker, R.S., Corbett, A.T., Koedinger, K.R. (2004) Learning to Distinguish Between Representations of Data: a Cognitive Tutor That Uses Contrasting Cases. *Proceedings of the International Conference of the Learning Sciences*, 58-65.

Baker, R.S., Corbett, A.T., Koedinger, K.R., Wagner, A.Z. (2004) Off-Task Behavior in the Cognitive Tutor Classroom: When Students "Game The System". *Proceedings of ACM CHI 2004: Computer-Human Interaction,* 383-390.

Baker R.S., Corbett A.T., Koedinger K.R., Schneider, M.P. (2003) A Formative Evaluation of a Tutor for Scatterplot Generation: Evidence on Difficulty Factors. *Proceedings of the International Conference on Artificial Intelligence in Education*, 107-115.

Baker R.S., Corbett A.T., Koedinger K.R. (2002) The Resilience of Overgeneralization of Knowledge about Data Representations. Paper presented at *American Educational Research Association Conference*. Available from *Education Resources Information Center (ERIC) Database*, ERIC# ED465530.

Baker R.S., Corbett A.T., Koedinger K.R. (2001) Toward a Model of Learning Data Representations. *Proceedings of the 23rd Conference of the Cognitive Science Society*, 45-50.

Baker, R.S., Boilen, M., Goodrich, M., Tamassia, R., and Stibel, B.A.(1999) Testers and Visualizers for Teaching Data Structures. *30th ACM SIGCSE Technical Symposium on Computer Science Education*, 261-265.

White Papers/Official Reports

Baker, R.S., Boser, U., Jones, L., Lee, S., Ocumpaugh, J., Sieve, M., Cheng, Y. (2022) Transforming Educational Technology Through Convergence. Philadelphia, PA: University of Pennsylvania Center for Learning Analytics.

Baker, R.S., Boser, U. (2021) *High-Leverage Opportunities for Learning Engineering*. Philadelphia, PA: University of Pennsylvania Center for Learning Analytics.

Baker, R.S., Berning, A., Gowda, S.M. (2020) *Differentiating Military-Connected and Non-Military-Connected Students: Predictors of Graduation and SAT Score.* Unpublished Technical Report.

Siemens, G., Gasevic, D., Haythornthwaite, C., Dawson, S., Shum, S.B., Ferguson, R., Duval, E., Verbert, K., Baker, R.S.J.d. (2011) Open Learning Analytics: an integrated & modularized platform: Proposal to design, implement and evaluate an open platform to integrate heterogeneous learning analytics techniques. Athabasca, Alberta, Canada: Society for Learning Analytics Research.

Woolf, B.P., Shute, V., VanLehn, K., Burleson, W., King, J.L., Suthers, D., Bredeweg, B., Luckin, R., Baker, R.S.J.d., Tonkin, E. (2010) *A Roadmap for Education Technology.* Washington, DC: Computing Community Consortium.

Woolf, B.P., Baker, R., Gianchandani, E.P. (2010) *From Data to Knowledge to Action: Enabling Personalized Education.* Washington, DC: Computing Community Consortium.

Conference Short Papers and Poster Papers

Dai, Y., Vanacore, K., Baker, R.S., Slater, S. (in press) Understanding MOOC Stopout Patterns: Course and Assessment-Level Insights. *Proceedings of ACM Learning @ Scale*.

Mehta, S., Srivastava, N., Liu, X., Vanacore, K., Baker, R.S. (in press) Do MOOC Conversations Matter? Investigating the Role of Social Presence and Course-Relevant Discussion in Career Advancement. *Proceedings of ACM Learning @ Scale*.

Zhang, J., Vanacore, K., Baker, R.S., Ch, N., Mills, C., Henkel, O. (in press) How Much Mastery is Enough Mastery? The Relationship between Mastery in a Lesson and the Performance on the Subsequent Lesson. *Proceedings of the International Conference on Educational Data Mining*.

Pankiewicz, M., Shi, Y., Baker, R.S. (in press) srcML-DKT: Enhancing Deep Knowledge Tracing with Robust Code Representations from srcML. *Proceedings of the International Conference on Educational Data Mining*.

Liu, X., Wei, Z., Baker, R.S., Metcalf, S.J., Zhang, J., Barany, A., Slater, A., Swanson, L., Gagnon, D. (in press) Integrating Large Language Models and Machine Learning to Detect Struggle in Educational Games. To appear in *Proceedings of the International Conference on Artificial Intelligence and Education.*

Belitz, C., Lee, H., Nasiar, N., Fancsali, S.E., Stinar, F., Almoubayyed, H., Ritter, S., Baker, R.S., Ocumpaugh, J., Bosch, N. (in press) Exploring Student Identity in Adaptive Learning Systems through Qualitative Data. To appear in *Proceedings of the International Conference on Artificial Intelligence and Education.*

Rodrigues, L., Zambrano, A.F., Pankiewicz, M., Barany, A., Baker, R.S. (in press) Usage Patterns and Performance Gains in Gamified Online Judges: A Data-driven Analysis informed by Cognitive Psychology in CS1. To appear in *Proceedings of the International Conference on Artificial Intelligence and Education.*

Vanacore, K., Barany, A., Mehta, S., Baker, R.S., Ocumpaugh, J., Al Nahin Ch, N., Kuvar, V., Mills, C., Henkel, O. (in press) Downshifting: the nuanced antecedents of seeking easier content. To appear in *Proceedings of the Annual Meeting of the International Society of the Learning Sciences.*

Wei, Z., Liu, X., Barany, A., Vanacore, K., Baker, R.S., Pratt, J., Shah, M., Slater, S., Mogessie, M. (in press) MORF ENA – A Tool for Making MOOC Discussion Forum Data More Accessible for Epistemic Network Analysis. To appear in *Proceedings of the Annual Meeting of the International Society of the Learning Sciences.*

Baker, R.S., Hutt, S. (2025) MORF: A Post-Mortem. *Proceedings of the International Conference on Learning Analytics and Knowledge.*

Baker, R.S., Mills, C., Choi, J. (2025) The Difficulty of Achieving High Precision with Low Base Rates for High-Stakes Intervention. *Proceedings of the International Conference on Learning Analytics and Knowledge.*

Borchers, C., Baker, R.S. (2025). ABROCA Distributions For Algorithmic Bias Assessment: Considerations Around Interpretation. *Proceedings of the International Conference on Learning Analytics and Knowledge.*

Lee, F.M., Baker, R.S., Tomar, P., Kumari, K., Liang, Q., Wei, Z. (2024) Videos for Parents and Child Performance. *Proceedings of Learning @ Scale 2024.*

Shah, M., Baker, R.S., Granville, P., Sharp, K. (2024) Examining Student Engagement in Online Learning Platforms for Promoting Exam Readiness and Success in Undergraduate Nursing Education. *Proceedings of Learning @ Scale 2024.*

Esbenshade, L., Vitale, J., Baker, R.S. (2024) Non-Overlapping Leave Future Out Validation (NOLFO): Implications for Graduation Prediction. *Proceedings of the 17th International Conference on Educational Data Mining.*

Nasiar, N., Baker, R.S., Andres, J.M.A.L., Srivastava, N. (2024) Different AIED in Different Places: Tracing the differences in Geographical Distribution of Secondary Data Analysis and A/B tests. *Proceedings of the 17th International Conference on Educational Data Mining.*

Svabensky, V., Verger, M., Rodrigo, M.M.T., Monterozo, C.J.G., Baker, R.S., Saavedra, M.Z.N.L., Lalle, S., Shimada, A. (2024) Evaluating Algorithmic Bias in Models for Predicting Academic Performance of Filipino Students. *Proceedings of the 17th International Conference on Educational Data Mining.*

Svabensky, V., Bouchet, F., Tarrazona, F., Lopez, M., Baker, R.S. (2024) Data Set Size Analysis for Detecting the Urgency of Discussion Forum Posts. *Proceedings of the 14th International Conference on Learning Analytics and Knowledge (LAK24),* 124-126.

Cloude, E., Baker, R.S., Pankiewicz, M. (2023) Measuring Self-regulated Learning Processes in Computer Science Education. *Proceedings of the 31st International Conference on Computers in Education.*

Andres, J.M.A.L., Cloude, E., Baker, R.S., Lee, S. (2023) Investigating Cognitive Biases in Self-Explanation Behaviors during Game-based Learning about Mathematics. *Proceedings of the 31st International Conference on Computers in Education.*

Liu, X., Slater, S., Andres, J.M.A.L., Swanson, L., Scianna, J., Gagnon, D., Baker, R.S. (2023) Struggling to Detect Struggle in Students Playing a Science Exploration Game. *Proceedings of CHI Play 2023 Work in Progress.*

Gonzalez, H., Li, J., Jin, H., Ren, J., Zhang, H., Akinyele, A., Wang, A., Miltsakaki, E., Baker, R.S., Callison-Burch, C. (2023) Automatically Generated Summaries of Video Lectures Enhance Students' Learning Experience. *Proceedings of the 18th Workshop on Innovative Use of NLP for Building Educational Applications.*

Zhang, J., Baker, R.S., Farmer, T. (2023) No Benefit for High-Dosage Time Management Interventions in Online Courses. *Proceedings of the ACM Learning @ Scale Conference.*

Hutt, S., Das, S., Baker, R.S. (2023) The Right To Be Forgotten and Educational Data Mining: Challenges and Paths Forward. *Proceedings of the International Conference on Educational Data Mining.*

Svabensky, V., Baker, R.S., Zambrano, A., Zou, Y., Slater, S. (2023) Towards Generalizable Detection of Urgency of Discussion Forum Posts. *Proceedings of the International Conference on Educational Data Mining.* **[Won Best Short Paper Award]**

Pankiewicz, M., Baker, R.S., Ocumpaugh, J. (2023) Using intelligent tutoring on the first steps of learning to program: affective and learning outcomes. *Proceedings of the 24th International Conference on Artificial Intelligence in Education.* **[Nominated for Best Poster Award]**

Nasiar, N., Baker, R.S., Zou, Y., Zhang, J., Hutt, S. (2023) Modeling problem-solving strategy invention (PSSI) in an online math learning environment. *Proceedings of the 24th International Conference on Artificial Intelligence in Education.*

Zhang, J., Pang, S., Andres, J.M.A.L., Baker, R.S., Cloude, E., Nguyen, H.A., McLaren, B.M. (2023) Leveraging Natural Language Processing to Detect Gaming the System in Open-ended Questions in a Math Digital Learning Game. Paper presented at the *2023 Annual Meeting of the Society for Text and Discourse.*

Hutt, S., Baker, R.S., DePiro, A., Wang, J., Rhodes, S., Ocumpaugh, J., Mills, C. (2023) Feedback on Feedback: Automated Detection of Peer Feedback Quality. Paper presented at the *2023 Annual Meeting of the Society for Text and Discourse.*

Zhang, J., Baker, R.S., Andres, J.M.A.L., Hutt, S., Sethuraman, S. (2023) Automated Multi-Dimensional Analysis of Peer Feedback in Middle School Mathematics. *Proceedings of 16th International Conference on Computer-Supported Collaborative Learning.*

Andres, J.M.A.L., Baker, R.S., Hutt, S., Mills, C., Zhang, J., Rhodes, S., DePiro, A. (2023) Anxiety, Achievement, and Self-Regulated Learning in CueThink. *Proceedings of the 3rd International Meeting of the International Society for the Learning Sciences.*

Slater, S., Baker, R.S., Gagnon, D., Harpstead, E., Andres, J.M.A.L., Swanson, L. (2022) Changing Students' Perceptions of a History Exploration Game Using Different Scripts. *Proceedings of the 30th International Conference on Computers in Education.*

Botelho, A., Adjei, S., Bahel, V., Baker, R.S. (2022) Exploring Relationships Between Temporal Patterns of Affect and Student Learning. *Proceedings of the 30th International Conference on Computers in Education.*

Andres, J.M.A.L., Hutt, S., Ocumpaugh, J., Baker, R.S. (2022) Investigating How Achievement Goals Influence Student Behavior in Computer Based Learning. *Proceedings of the 30th International Conference on Computers in Education.*

He, M., Baker, R.S., Hutt, S., Zhang, J. (2022) A Less Conservative Method for Reliability Estimation for Cohen's Kappa. *Proceedings of the International Conference on Quantitative Ethnography.*

Li, Y., Zou, X., Ma, Z., Baker, R.S. (2022) A Multi-Pronged Redesign to Reduce Gaming the System. *Proceedings of the 23rd International Conference on Artificial Intelligence in Education.*

Karumbaiah, S., Zhang, J., Baker, R.S., Scruggs, R., Cade, W., Clements, M., Lin, S. (2022) Using Neural Network-Based Knowledge Tracing for a Learning System with Unreliable Skill Tags. *Proceedings of the 15th International Conference on Educational Data Mining.*

Levin, N., Baker, R.S., Nasiar, N., Fancsali, S., Hutt, S. (2022) Evaluating Gaming Detector Model Robustness Over Time. *Proceedings of the 15th International Conference on Educational Data Mining*.

Slater, S., Baker, R.S., Shute, V., Bowers, A. (2022) Engagement-Based Player Typologies Describe Game-Based Learning Outcomes. *Proceedings of the 23rd International Conference on Artificial Intelligence in Education*.

Maier, C., Baker, R.S., Stalzer, S. (2021) Challenges to Applying Performance Factor Analysis to Existing Learning Systems. *Proceedings of the 29th International Conference on Computers in Education*.

Ocumpaugh, J., Hutt, S., Andres, J.M.A.L., Baker, R.S., Biswas, G., Bosch, N., Paquette, L., Munshi, A. (2021) Using Qualitative Data from Targeted Interviews to Inform Rapid AIED Development. *Proceedings of the 29th International Conference on Computers in Education*.

Hutt, S., Ocumpaugh, J., Andres, J.M.A.L., Munshi, A., Bosch, N., Baker, R.S., Zhang, Y., Paquette, L., Slater, S., Biswas, G. (2021) Who's Stopping You? – Using Microanalysis to Explore the Impact of Science Anxiety on Self-Regulated Learning Operations. *Proceedings of the 42nd Annual Meeting of the Cognitive Science Society.*

Hutt, S., Ocumpaugh, J., Andres, J.M.A.L., Bosch, N., Paquette, L., Biswas, G., Baker, R.S. (2021) Sharpest Tool in the Shed: Investigating SMART Models of Self-Regulation and their Impact on Learning. *Proceedings of the International Conference on Educational Data Mining.*

Zhang, J., Das, R., Baker, R.S., Scruggs, R. (2021) Knowledge Tracing Models' Predictive Performance when a Student Starts a Skill. *Proceedings of the International Conference on Educational Data Mining.* **[Runner-up for Best Poster Presentation]**

Baker, R., McLaren, B., Hutt, S., Richey, J.E., Rowe, E., Almeda, M.V., Mogessie, M., Andres, J.M.A.L. (2021) Towards Sharing Student Models Across Learning Systems. *Proceedings of the 22nd International Conference on Artificial Intelligence in Education.*

Zhou, Y., Andres-Bray, J.M., Hutt, S., Ostrow, K., Baker, R.S. (2021) A Comparison of Hints vs. Scaffolding in a MOOC with Adult Learners. *Proceedings of the 22nd International Conference on Artificial Intelligence in Education.*

Baker, R.S., Al Yammahi, A., El Sebaaly, J., Nadaf, A., Kapp, A., Adjei, S. (2020) Can Computer-Based Learning Environments Mitigate Large Class Size? *Proceedings of the 28th International Conference on Computers in Education.*

Mogessie, M., Richey, J.E., McLaren, B.M., Andres-Bray, J.M.L., Baker, R.S. (2020) Confrustion and Gaming while Learning with Erroneous Examples in a Decimals Game. *Proceedings of the 21st International Conference on Artificial Intelligence in Education,* 208-213.

Tywoniw, R., Crossley, S.A., Ocumpaugh, J., Karumbaiah, S., Baker, R. (2020) Relationships Between Math Performance and Human Judgments of Motivational Constructs in an Online Math Tutoring System. *Proceedings of the 21st International Conference on Artificial Intelligence in Education,* 329-333.

Slater, S., Baker, R.S., Wang, Y. (2020) Iterative Feature Engineering Through Text Replays of Model Errors. *Proceedings of the 13th International Conference on Educational Data Mining,* 503-508.

Agnihotri, L., Baker, R.S., Stalzer, S. (2020) A Procrastination Index for Online Learning Based on Assignment Start Time. *Proceedings of the 13th International Conference on Educational Data Mining,* 550-554.

Shah, M., Snow, E., Baker, R.S., Gouveia, C. (2020) Learning Scientists in Academia and Industry: Building Bridges and Expanding the Potential of our Community. *Proceedings of the International Conference on the Learning Sciences.*

Lan, A., Botelho, A., Karumbaiah, S., Baker, R., Heffernan, N. (2020) Accurate and Interpretable Sensor-free Affect Detectors via Monotonic Neural Networks. *Proceedings of the 10th International Conference on Learning Analytics and Knowledge.*

Molenaar, I., Horvers, A., Baker, R.S. (2019) How do personalized visualizations influence students self-regulated learning? Poster presented at *18th Biennial European Association of Research and Learning and Instruction Conference.*

Zou, X., Ma, W., Ma, Z., Baker, R. (2019) Towards Helping Teachers Select Optimal Content for Students. *Proceedings of the 20th International Conference on Artificial Intelligence in Education*, 413-417.

Owen, V.E., Roy, M-H., Thai, K.P., Burnett, V., Jacobs, D., Keylor, E., Baker, R.S. (2019) Detecting Wheel Spinning and Productive Persistence in Educational Games. *Proceedings of the 12th International Conference on Educational Data Mining*, 378-383.

Coleman, C., Baker, R., Stephenson, S. (2019) A Better Cold-Start for Early Prediction of Student At-Risk Status in New School Districts. *Proceedings of the 12th International Conference on Educational Data Mining,* 732-737.

Botelho, A.F., Baker, R., Heffernan, N.T. (2019) Machine-Learned or Expert-Engineered Features? Exploring Feature Engineering Methods in Detectors of Disengaged Behavior and Affect. Poster paper. *Proceedings of the 12th International Conference on Educational Data Mining,* 508-511.

Andres-Bray, J.M., Ocumpaugh, J., Baker, R. (2019) Hello? Who is posting, who is answering, and who is succeeding in Massive Open Online Courses. Poster paper. *Proceedings of the 12th International Conference on Educational Data Mining,* 492-495.

Anderson, H., Boodhwani, A., Baker, R. (2019) Assessing the Fairness of Graduation Predictions. Poster paper. *Proceedings of the 12th International Conference on Educational Data Mining,* 488-491.

Anderson, H., Boodhwani, A., Baker, R. (2019) Predicting Graduation at a Public R1 University. *Proceedings of the 9th International Learning Analytics and Knowledge Conference.*

Slater, S., Ocumpaugh, J., Baker, R., Li, J., Labrum, M. (2018) Identifying Changes in Math Identity Through Adaptive Learning Systems Use. *Proceedings of the 26th International Conference on Computers in Education,* 71-76.

Aleven, V., Sewall, J., Andres, J.M., Sottilare, R., Long, R., Baker, R. (2018) Towards Adapting to Learners at Scale: Integrating MOOC and Intelligent Tutoring Frameworks. *Proceedings of the 4th Annual ACM Conference on Learning at Scale.* Article Number 14.

Paquette, L., Baker, R., Moskal, M. (2018) A System-General Model for the Detection of Gaming the System Behavior in CTAT and LearnSphere. *Proceedings of the 15th International Conference on Artificial Intelligence and Education,* 257-260.

Aghababyan, A., Lewkow, N., Baker, R. (2018) Enhancing the Clustering of Student Performance Using the Variation in Confidence. *Proceedings of the 14th International Conference on Intelligent Tutoring Systems,* 274-279.

Karumbaiah, S., Rahimi, S., Baker, R.S., Shute, V., D'Mello, S.K. (2018) Is Student Frustration in Learning Games More Associated with Game Mechanics or Conceptual Understanding? *Proceedings of the International Conference of the Learning Sciences.*

Aslan, S., Okur, E., Alyuz, N., Esma, A.A., Baker, R.S. (2018) Towards Human Affect Modeling: A Comparative Analysis of Discrete Affect and Valence-Arousal Labeling. *Proceedings of the HCI International 2018 Conference,* 372-379.

Rowe, E., Asbell-Clarke, J., Baker, R., Gasca, S., Bardar, E., Scruggs, R. (2018) Labeling Implicit Computational Thinking in Pizza Pass Gameplay. *Extended Abstracts of the 2018 CHI Conference on Human Factors in Computing Systems.* Paper Number LBW568.

Kostyuk, V., Almeda, M.V., Baker, R.S. (2018) Correlating Affect and Behavior in Reasoning Mind with State Test Achievement. *Proceedings of the International Conference on Learning Analytics and Knowledge*, 26-30.

Slater, S., Ocumpaugh, J., Baker, R., Allen, L., Almeda, M.V., Heffernan, N. (2017) Using Natural Language Processing Tools to Develop Complex Models of Student Engagement. *Proceedings of the 7th International Conference on Affective Computing and Intelligent Interaction.*

Kai, S., Andres, J.M.L., Paquette, L., Baker, R.S., Molnar, K., Watkins, H., Moore, M. (2017) Predicting Student Retention from Behavior in an Online Orientation Course. *Proceedings of the 10th International Conference on Educational Data Mining*, 250-255.

Andres, J.M.L., Baker, R.S., Siemens, G., Spann, C.A., Gasevic, D., Crossley, S. (2017) Studying MOOC Completion at Scale Using the MOOC Replication Framework. *Proceedings of the 10th International Conference on Educational Data Mining*, 338-339.

Eagle, M., Corbett, A., Stamper, J., McLaren, B., Wagner, A., MacLaren, B., Mitchell, A., Baker, R. (2017) Exploring Learner Model Differences Between Students. *Proceedings of the 18th International Conference on Artificial Intelligence in Education*, 494-497.

Ocumpaugh, J., Almeda, M.V., Slater, S., Baker, R., Allen, L. (2017) Lexical Sophistication, Learning, and Engagement in Math Problems. Paper presented at the *27th Annual Meeting of the Society for Text and Discourse*.

Zimmerman, N., Baker, R. (2017) Mining Knowledge Components From Many Untagged Questions. *Proceedings of the International Conference on Learning Analytics and Knowledge*, 566-567.

Aghababyan, A., Lewkow, N. Baker, R. (2017) Exploring the Asymmetry of Metacognition. *Proceedings of the International Conference on Learning Analytics and Knowledge,* 115-119.

Agnihotri, L., Essa, A., Baker, R. (2017) Impact of Student Choice of Content Adoption Delay on Course Outcomes. *Proceedings of the International Conference on Learning Analytics and Knowledge*, 16-20.

Slater, S., Baker, R., Almeda, M.V., Bowers, A., Heffernan, N. (2017) Using Correlational Topic Modeling for Automated Topic Identification in Intelligent Tutoring Systems. *Proceedings of the International Conference on Learning Analytics and Knowledge*, 393-397.

Godwin, K.E., Seltman, H., Almeda, M.V.Q., Kai, S., Baker, R.S., Fisher, A.V. (2016) The Variable Relationship Between On-Task Behavior and Learning. *Proceedings of the 38th Annual Meeting of the Cognitive Science Society,* 812-817.

Malkiewich, L., Baker, R.S., Shute, V., Kai, S., Paquette, L. (2016) Classifying behavior to elucidate elegant problem solving in an educational game. *Proceedings of the 9th International Conference on Educational Data Mining,* 448-453.

Inventado, P.S., Scupelli, P., Van Inwegen, E., Ostrow, K., Heffernan, N., Baker, R.S., Slater, S., Almeda, M.V., Ocumpaugh, J. (2016) Hint Availability Slows Completion Times in Summer Work. *Proceedings of the 9th International Conference on Educational Data Mining,* 388-393

Owen, V., Anton, G., Baker, R.S. (2016) Modeling User Trajectories of Exploration and Boundary Testing in Learning Games. *Proceedings of the 24th Conference on User Modeling, Adaptation, and Personalization,* 301-302

Aleven, V., Baker, R., Wang, Y., Sewall, J., Popescu, O. (2016) Bringing Non-Programmer Authoring of Intelligent Tutors to MOOCs. *Proceedings of ACM Learning at Scale,* 313-316.

Rosé, C.P., Ferschke, O., Tomar, G., Yang, D., Howley, I., Aleven, V., Siemens, G., Crosslin, M., Gasevic, D., Baker, R. (2015) Challenges and opportunities of dual-layer MOOCs: Reflections from an edX deployment study. *Proceedings of the 11th International Conference on Computer Supported Collaborative Learning (CSCL 2015)*, vol. 2, pp. 848-851

Moore, G., Baker, R.S., Gowda, S.M. (2015) The Antecedents of Moments of Learning. *Proceedings of the Annual Meeting of the Cognitive Science Society,* 1631-1636.

Brown, R., Lynch, C.F., Eagle, M., Albert, J., Barnes, T., Baker, R., Bergner, Y., McNamara, D. (2015) Good Communities and Bad Communities: Does membership affect performance? *Proceedings of the 8th International Conference on Educational Data Mining,* 612-613.

Baker, R., Lindrum, D., Lindrum, M.J., Perkowski, D. (2015) Analyzing Early At-Risk Factors in Higher Education e-Learning Courses. *Proceedings of the 8th International Conference on Educational Data Mining,* 150-155.

Paquette, L., Ocumpaugh, J., Baker, R.S. (2015) Simulating Multi-Subject Momentary Time Sampling. *Proceedings of the 8th International Conference on Educational Data Mining,* 586-587.

Snow, E.L., San Pedro, M.O.Z., Jacovina, M.E., McNamara, D.S., Baker, R.S. (2015) Achievement versus Experience: Predicting Students' Choices during Gameplay. *Proceedings of the 8th International Conference on Educational Data Mining.* 564-565.

Rowe, E., Baker, R.S., Asbell-Clarke, J. (2015) Strategic Game Moves Mediate Implicit Science Learning. *Proceedings of the 8th International Conference on Educational Data Mining,* 432-435.

Crossley, S., McNamara, D., Baker, R.S., Wang, Y., Paquette, L., Barnes, T., Bergner, Y. (2015) Language to Completion: Success in an Educational Data Mining Massive Open Online Course. *Proceedings of the 8th International Conference on Educational Data Mining,* 388-391.

Aleven, V., Sewall, J., Popescu, O., Xhakaj, F., Chand, D., Baker, R., Wang, Y., Siemens, G., Rosé, C., Gasevic, D. (2015) The Beginning of a Beautiful Friendship? Intelligent Tutoring Systems and MOOCs. *Proceedings of the 17th International Conference on Artificial Intelligence in Education,* 525-528.

Mulqueeny, K., Mingle, L.A., Kostyuk, V., Baker, R.S., Ocumpaugh, J. (2015) Improving Engagement in an E-Learning Environment. *Proceedings of the 17th International Conference on Artificial Intelligence in Education,* 730-733.

Jiang, Y., Baker, R.S., Paquette, L., San Pedro, M.O., Heffernan, N.T. (2015) Learning, Moment-by-Moment, and Over the Long Term. *Proceedings of the 17th International Conference on Artificial Intelligence in Education,* 654-657.

San Pedro, M.O., Baker, R., Heffernan, N., Ocumpaugh, J. (2015) Exploring College Major Choice and Middle School Student Behavior, Affect and Learning: What Happens to Students Who Game the System? *Proceedings of the 5th International Learning Analytics and Knowledge Conference,* 36-40.

Miller, W.L., Baker, R., Labrum, M., Petsche, K., Liu, Y-H., Wagner, A. (2015) Automated Detection of Proactive Remediation by Teachers in Reasoning Mind Classrooms. *Proceedings of the 5th International Learning Analytics and Knowledge Conference*, 290-294.

Andres, J.M., Rodrigo, M.M.T., Sugay, J.O., Baker, R.S., Paquette, L., Shute, V.J., Ventura, M., Small, M. (2014) An Exploratory Analysis of Confusion Among Students Using Newton's Playground. *Proceedings of the 22nd International Conference on Computers in Education*.

San Pedro, M.O.Z., Ocumpaugh, J.L., Baker, R.S., Heffernan, N.T. (2014) Predicting STEM and Non-STEM College Major Enrollment from Middle School Interaction with Mathematics Educational Software. *Proceedings of the 7th International Conference on Educational Data Mining*, 276-279.

Paquette, L., de Carvalho, A.M.J.A., Baker, R.S., Ocumpaugh, J. (2014) Reengineering the Feature Distillation Process: A Case Study in the Detection of Gaming the System. *Proceedings of the 7th International Conference on Educational Data Mining*, 284-287.

Baker, R.S., Ocumpaugh, J. (2014) Cost-Effective, Actionable Engagement Detection at Scale. *Proceedings of the 7th International Conference on Educational Data Mining*, 345-346.

Hsiao, I-H., Chae, H.S., Malhotra, M., Baker, R.S.J.d., Natriello, G. (2014) Exploring Engaging Dialogues in Video Discussions. *Proceedings of the 7th International Conference on Educational Data Mining*, 363-364.

Rowe, E., Baker, R.S., Asbell-Clarke, J., Kasman, E., Hawkins, W.J. (2014) Building Automated Detectors of Gameplay Strategies to Measure Implicit Science Learning. *Proceedings of the 7th International Conference on Educational Data Mining*, 337-338.

Hawkins, W.J., Heffernan, N.T., Baker, R.S.J.d. (2014) Learning Bayesian Knowledge Tracing Parameters with a Knowledge Heuristic and Empirical Probabilities. *Proceedings of the 12th International Conference on Intelligent Tutoring Systems*, 150-155.

Stephenson, S., Baker, R., Corrigan, S. (2014) Towards Building an Automated Detector of Engaged and Disengaged Behavior in Game-Based Assessments. Poster presented at the *10th Annual Conference on Games+Learning+Society.* **[Won Attendee Choice Award for Most Original Research]**.

Almeda, M.V., Scupelli, P., Baker, R.S., Weber, M., Fisher, A. (2014) Clustering of Design Decisions in Classroom Visual Displays. *Proceedings of the 4th International Conference on Learning Analytics and Knowledge*, 44-48.

Godwin, K.E., Almeda, M.V., Petroccia, M., Baker, R.S., Fisher, A.V. (2013) Classroom activities and off-task behavior in elementary school children. Poster paper. *Proceedings of the Annual Meeting of the Cognitive Science Society,* 2428-2433.

Corbett, A., MacLaren, B., Wagner, A., Kauffman, L., Mitchell, A., Baker, R. (2013) Enhancing Robust Learning through Problem Solving in the Genetics Cognitive Tutor. *Proceedings of the Annual Meeting of the Cognitive Science Society*, 2094-2099.

Hershkovitz, A., Baker, R.S.J.d., Moore, G.R., Rossi, L.M., van Velsen, M. (2013) The Interplay between Affect and Engagement in Classrooms Using AIED Software. *Proceedings of the 16th International Conference on Artificial Intelligence and Education,* 587-590.

Ocumpaugh, J., Baker, R.S.J.d., Gaudino, S., Labrum, M.J., Dezendorf, T. (2013) Field Observations of Engagement in Reasoning Mind. *Proceedings of the 16th International Conference on Artificial Intelligence and Education,* 624-627.

Baker, R.S.J.d., Ocumpaugh, J.L., Gowda, S.M., Gowda, S.M., Heffernan, N.T. (2013) Ensuring Reliability of Educational Data Mining Detectors for Diverse Populations of Learners. Presentation at *CREA: Center for Culturally Responsive Evaluation and Assessment: Inaugural Conference*. Published as Extended Abstract.

Sao Pedro, M.A., Baker, R.S.J.d., Gobert, J.D. (2013) What Different Kinds of Stratification Can Reveal about the Generalizability of Data-Mined Skill Assessment Models. *Proceedings of the 3rd International Conference on Learning Analytics and Knowledge*, 190-194.

Rodrigo, M.M.T., Baker, R.S.J.d., McLaren, B., Jayme, A., Dy, T. (2012) Development of a Workbench to Address the Educational Data Mining Bottleneck. *Proceedings of the 5th International Conference on Educational Data Mining,* 152-155.

Soriano, J.C.A., Rodrigo, M.M.T., Baker, R.S.J.d., Ogan, A., Walker, E., Castro, M.J., Genato, R., Fontaine, S., Belmontez, R. (accepted) A Cross-Cultural Comparison of Effective Help-Seeking Behavior among Students Using an ITS for Math. Poster paper. *Proceedings of the International Conference on Intelligent Tutoring Systems,* 636-637.

Roberge, D., Rojas, A., Baker, R.S.J.d. (2012) Does the Length of Time Off-Task Matter? *Proceedings of the 2nd International Conference on Learning Analytics and Knowledge.*

Siemens, G., Baker, R.S.J.d. (2012) Learning Analytics and Educational Data Mining: Towards Communication and Collaboration. *Proceedings of the 2nd International Conference on Learning Analytics and Knowledge.*

Hershkovitz, A., Baker, R.S.J.d., Gobert, J., Wixon, M. (2011) Goal Orientation and Changes of Carelessness over Consecutive Trials in Science Inquiry. Poster paper. *Proceedings of the 4th International Conference on Educational Data Mining*, 315-316.

Walker, E., Ogan, A., Baker, R.S.J.d., de Carvalho, A., Laurentino, T., Rebolledo-Mendez, G., Castro, M.J. (2011) Observations of Collaboration in Cognitive Tutor Use in Latin America. Poster paper. *Proceedings of the 15th International Conference on Artificial Intelligence in Education*, 575-577.

Hershkovitz, A., Wixon, M., Baker, R.S.J.d., Gobert, J., Sao Pedro, M. (2011) Carelessness and Goal Orientation in a Science Microworld. Poster paper. *Proceedings of the 15th International Conference on Artificial Intelligence in Education*, 462-465.

Stamper, J., Koedinger, K., Baker, R., Skogsholm, A., Leber, B., Demi, S., Yu, S., Spencer, D. (2011) Managing the Educational Dataset Lifecycle with Datashop. Poster paper. *Proceedings of the 15th International Conference on Artificial Intelligence in Education*, 557-559.

Rodrigo, M.M.T., Baker, R.S.J.d., Nabos, J. (2010) The Relationships Between Sequences of Affective States and Learner Achievement. *Proceedings of ICCE 2010, the 18th International Conference on Computers in Education.*

Rodrigo, M.M.T., Baker, R.S.J.d., Agapito, J., Nabos, J., Repalam, M.C., Reyes, S.S. (2010) Comparing Disengaged Behavior within a Cognitive Tutor in the USA and Philippines. *Proceedings of the 10th Annual Conference on Intelligent Tutoring Systems*, 263-265.

Giguere, S., Beck, J., Baker, R. (2010) Analyzing Student Gaming with Bayesian Networks. *Proceedings of the 10th Annual Conference on Intelligent Tutoring Systems,* 321-323.

Baker, R.S., Corbett, A., Koedinger, K., Roll, I. (2005) Detecting When Students Game The System, Across Tutor Subjects and Classroom Cohorts. *Proceedings of User Modeling 2005*, 220-224.

Baker, R.S., Wagner, A.Z., Corbett, A.T., Koedinger, K.R. (2004) The Social Role of Technical Personnel in the Deployment of Intelligent Tutoring Systems. *Proceedings of 7th International Conference on Intelligent Tutoring Systems*, 785-787.

Roll, I., Baker, R.S., Aleven, V., Koedinger, K.R. (2004) A Metacognitive ACT-R model of Students' Learning Strategies in Intelligent Tutoring Systems. *Proceedings of 7th International Conference on Intelligent Tutoring Systems*, 854-856.

Roll, I., Baker, R.S., Aleven, V., Koedinger, K.R. (2004) What goals do students have when choosing the actions they perform? *Proceedings of 6th International Conference on Cognitive Modeling,* 380-381.

Dabbish L.A., Baker R.S. (2003) Administrative Assistants as Interruption Mediators. *ACM CHI: Computer-Human Interaction*, 1020-1021.

Edited Books

Romero, C., Ventura, S., Pechenizkiy, M., Baker, R.S.J.d. (Eds.) (2010) *Handbook of Educational Data Mining*. Boca Raton, FL: CRC Press.

Edited Proceedings

Andre, E., Baker, R., Hu, X., Rodrigo, M.M.T., du Boulay, B. (Eds.) (2017) *Proceedings of the 18th International Conference on Artificial Intelligence and Education.* Wuhan, China. July 2017.

Baker, R.S.J.d., Merceron, A., Pavlik, P.I. (Eds.) (2010) *Educational Data Mining 2010: 3rd International Conference on Educational Data Mining, Proceedings.* Pittsburgh, PA, USA. June 2010.

Baker, R.S.J.d., Barnes, T., Beck, J.E. (Eds.) (2008) *Educational Data Mining 2008: 1st International Conference on Educational Data Mining, Proceedings.* Montreal, Quebec, Canada. June 2008.

Baker, R.S.J.d., Beck, J., Berendt, B., Kroner, A., Menasalvas, E., Weibelzahl, S. (Eds.) (2007) *Complete On-Line Proceedings of the Workshop on Data Mining for User Modeling, at the 11th International Conference on User Modeling (UM 2007).* Corfu, Greece. June 2007.

Heiner, C., Baker, R., Yacef, K. (Eds.) (2006) *Proceedings of the Workshop on Educational Data Mining, at the 8th International Conference on Intelligent Tutoring Systems.* Jhongli, Taiwan. July 2006.

Technical Reports

Medvedeva, O., de Carvalho, A.M.J.B., Baker, R.S.J.d., Crowley, R.S. (2013) A classifier to detect student 'gaming' of a medical education system. Technical Report. New York, NY: Educational Data Mining Laboratory.

Porayska-Pomsta, K., Mavrikis, M., D'Mello, S., Conati, C., Baker, R. (2011) Contemporary Methods for Affect-Related Knowledge Discovery and Emotion Measurement in Learning. Cognitive Science Research Paper, Department of Informatics, University of Sussex.

Baker, R.S., Wagner, A.Z., Corbett, A.T., Koedinger, K.R. (2004) The Social Role of Technical Personnel in the Deployment of Intelligent Tutoring Systems. *CMU Technical Report CMU-HCII-04-100*, July 2004.

Workshop Papers/Presentations

Zambrano, A.F., Baker, R.S., Lan, A. (2023) Active Learning for a Classroom Observer who Can't Time Travel. *Proceedings of the 3rd International Workshop on What's Next in Affect Modeling?, International Conference on Affective Computing + Intelligent Interaction.*

Thai, K-P., Owen, V.E., Baker, R.S. (2022) Predicting Transfer in a Game-Based Adaptive Instructional System. *Proceedings of the 3rd Workshop of the Learner Data Institute, EDM2022.*

Baker, R.S., Gasevic, D. (2021) Understanding LAK by understanding its philosophical paradigms. *Philosophy of Learning Analytics Workshop, LAK2021.*

Raamadhurai, S., Baker, R.S., Poduval, V. (2019) Curio SmartChat: A system for Natural Language Question Answering for Self-Paced K-12 Learning. *Proceedings of the 14th Workshop on Innovative Use of NLP for Building Educational Applications.*

Joksimovic, S., Baker, R.S., Ocumpaugh, J., Andres, J.M.L., Tot, I., Wang, E., Dawson, S. (2019) Automated Identification of Verbally Abusive Behaviors in Online Discussions. *Proceedings of the 3rd Workshop on Abusive Language Online,* 36-45.

Molenaar, I., Horvers, A., Dijkstra, R., Baker, R. (2019) Designing Dashboards to Support Learners' Self-Regulated Learning. In *Companion Proceedings of the 9th International Conference on Learning Analytics and Knowledge.*

Karumbaiah, S., Ocumpaugh, J., Labrum, M.J., Baker, R.S. (2019) Temporally Rich Features Capture Variable Performance Associated with Elementary Students' Lower Math Self-concept. To appear in *Proceedings of the Workshop on Social-Emotional Learning at the 9th International Learning Analytics and Knowledge Conference.*

Patikorn, T., Heffernan, N.T., Baker, R.S. (2018) ASSISTments Longitudinal Data Mining Competition 2017: A Preface. *Proceedings of the Workshop on Scientific Findings from the ASSISTments Longitudinal Data Competition,* International Conference on Educational Data Mining.

Gardner, J., Yang, Y., Baker, R.S., Brooks, R. (2018) Enabling End-to-End Machine Learning Replicability: A Case Study in Educational Data Mining. *Reproducibility in Machine Learning Workshop,* International Conference on Machine Learning 2018.

Gardner, J., Andres-Bray, M., Brooks, C., Baker, R. (2018) MORF: A Framework for Predictive Modeling and Replication at Scale With Privacy-Restricted MOOC Data. *Proceedings of the 3rd Workshop on Open Science in Big Data.*

Shechtman, N., Feng, M., Heffernan, N. & Baker, R. (2018). Clarification of the Wheel-Spinning Effect: One System, Two Contrasting Conclusions. Presentation at the *2018 Replication.Education Workshop* held at the International Conference on Educational Data Mining. Buffalo, NY. July 2018.

Baker, R., Coleman, C. (2018) Standardizing Modeling of User Behaviors: Which Behaviors Matter? *Proceedings of the Adaptive Instructional Systems Standards Workshop.*

Wang, Y.E., Baker, R., Paquette, L. (2017) Behavioral Predictors of MOOC Post-Course Development. *Proceedings of the Workshop on Integrated Learning Analytics of MOOC Post-Course Development.*

Brooks, C., Baker, R., Andres, J.M.L. (2017) Infrastructure for Replication in Learning Analytics. *Proceedings of the Workshop of the Methodology in Learning Analytics Bloc.*

Andres, J.M., Rodrigo, M.M.T., Baker, R., Paquette, L., Shute, V., Ventura, M. (2015) Analyzing Student Action Sequences and Affect While Playing Physics Playground. *Proceedings of the International Workshop on Affect, Meta-Affect, Data and Learning,* 24-33.

Brown, R., Lynch, C., Wang, Y., Eagle, M., Albert, J., Barnes, T., Baker, R., Bergner, Y., McNamara, D. (2015) Communities of Performance & Communities of Preference. *Proceedings of the Graph Analytics Workshop at the International Educational Data Mining (EDM) Conference.*

Baker, R.S., DeFalco, J.A., Paquette, L., Georgoulas, V., Rowe, J., Mott, B., Lester, J. (2015) Motivational Feedback Designs for Frustration in a Simulation-based Combat Medic Training Environment. *Proceedings of the 3rd Annual GIFT Users Symposium,* 81-88.

Miller, W.L., Baker, R.S., Labrum, M.J., Petsche, K., Wagner, A.Z. (2014) Boredom Across Activities, and Across the Year, within Reasoning Mind. *Proceedings of the Workshop on Data Mining for Educational Assessment and Feedback.*

Ocumpaugh, J., Baker, R.S., Kamarainen, A.M., Metcalf, S.J. (2014) Modifying Field Observation Methods on the Fly: Metanarrative and Disgust in an Environmental MUVE. *Proceedings of the 4th International Workshop on Personalization Approaches in Learning Environments (PALE),* 49-54.

DeFalco, J.A., Baker, R.S.J.d. (2013) Detection and Transition Analysis of Engagement and Affect in a Simulation-based Combat Medic Training Environment. *Proceedings of the AIED 2013 Workshop on GIFT.*

Gowda, S., Baker, R.S.J.d., Pardos, Z., Heffernan, N. (2011) The Sum is Greater than the Parts: Ensembling Student Knowledge Models in ASSISTments. *Proceedings of the KDD 2011 Workshop on KDD in Educational Data*.

Baker, R.S.J.d. (2007) Is Gaming the System State-or-Trait? Educational Data Mining Through the Multi-Contextual Application of a Validated Behavioral Model. *Complete On-Line Proceedings of the Workshop on Data Mining for User Modeling at the 11th International Conference on User Modeling 2007*, 76-80.

Baker, R.S.J.d., Corbett, A.T., Wagner, A.Z. (2006) Human Classification of Low-Fidelity Replays of Student Actions. *Proceedings of the Workshop on Educational Data Mining at the 8th International Conference on Intelligent Tutoring Systems*, 29-36.

Theses

Baker, R.S. (2005) Designing Intelligent Tutors That Adapt to When Students Game the System. Doctoral Dissertation. Advisors: Kenneth R. Koedinger, Albert T. Corbett

Baker, R.S. (2000) PILOT: An Interactive Tool for Learning and Grading. Senior Honors Thesis, Brown University. Advisors: Roberto Tamassia, Thomas Dean.

Other Participation at Workshops or Conferences

Deshpande, A., Tran, N., Huang, J., Bhargava, N., Baker, R., Nye, S. (2025) vRyan: An AI-Powered Teaching Agent Prototype Exploring Deepfake Question-Answering. Interactive Demo at the International Conference on Artificial Intelligence and Education.

Sommer, M., Shah, M., Baker, R.S., Granville, P. (2025) Identifying NCLEX-RN review course indicators to support at-risk students. Poster presentation at the 36th International Nursing Research Congress 2025.

Shah, M., Granville, P., Baker, R.S., Bussard, M. (2025) The Relationship Between the HESI Integrated Exit Exam & Next Generation NCLEX-RN: Updated Findings. Presentation at the 36th International Nursing Research Congress 2025.

Shah, M., Wilson, C., Baker, R., Granville, P, Gouveia, C., Babcock, B., Wimer, S. (2025) Radiography Success: HESI Exit Exam as a Gateway to ARRT Certification. Poster presentation at the 50th Annual Meeting of the Associate of Collegiate Educators in Radiologic Technology.

Gurung, A., Lin, J., Huang, Z., Baker, R., Aleven, V., Koedinger, K. (2024). Delayed starting and early stopping: Exploring the predictive validity of session-level indicators in predicting learning outcomes. Paper presented at the Society for Research on Educational Effectiveness (SREE) Conference, Baltimore, MD.

Steadman, C., Wong, A., Wei, Z., Baker, R., Mills, C. (2024) Too Hard or Just Right? How Difficulty Affects Student Engagement. Poster presentation at Winter Text & Discourse.

Baker, R.S. (2024) Qualitative Coding in Partnership with ChatGPT. Invited talk at the Association of Test Professional (ATP) EdTech & Computational Psychometrics 2024 Summit (ECPS). June 5, 2024.

Baker, R.S. (2024) Educational Technology: From Unknown Bias to Equity. Invited talk at the International Relations Committee Invited Session: Digital Technology: International Opportunities and Challenges for Equity in Education, AERA2024.

Baker, R.S. (2024) A Bit of History, and How We Can Do Better. Invited talk at the Workshop on Marrying Asset- and Deficit-Based Approaches: A Data Feminist Perspective in Learning Analytics, LAK2024.

Baker, R.S. (2024) Large language models for educational assessment at the PCLA. Invited talk at LAK24 Assess: The 4th Workshop on Learning Analytics and Assessment, LAK2024.

Shah, M., Gouveia, C., Baker, R.S., Granville, P.H., Bussard, M. (2024) The Relationship Between the HESI Integrated Exit Exam and Next Generation NCLEX-RN: Preliminary Findings. Presentation at the 35th International Nursing Research Conference.

Gouveia, C., Shah, M., Granville, P., Baker, R.S., Sharp, K. (2024) Predicting Success on the NCLEX-RN with Student Activity in Learning Platforms: A Retrospective Case Study. Presentation at the 35th International Nursing Research Conference.

Baker, R.S. (2023) Participation and presentation in plenary panel, What to do About and With AI in Education: Challenges and Opportunities for AI in Teaching and Learning. National Academy of Education Annual Meeting.

Baker, R.S. (2023) The State of the Situation and Policy Recommendations for Algorithmic Bias. Invited talk at OECD Conference: Towards an effective and equitable digital education ecosystem.

Baker, R.S. (2023) AI in the Future of Education: Opportunities and Challenges. Invited panel presentation at Notre Dame Trustworthy AI Lab in Education Summit (ND-TALES).

Baker, R.S. (2023) Speaker in Symposium How do I do "Quantitative Ethnography": Broadening perspectives and practices of QE, International Conference on Quantitative Ethnography.

Smith, A., Baker, R.S. (2023) Improving Measurement Practices through Equity-Forward Instrumentation Adaptation. Presentation at the Society for Research on Educational Effectiveness.

Baker, R.S., Esbenshade, L., Vitale, J., Karumbaiah, S. (2023) Using Demographic Data as Predictor Variables: a Questionable Choice. Invited talk, Workshop on Equity, Diversity, and Inclusion in Educational Technology Research and Development, AIED2023.

Baker, R.S. (2023) Participation in Panel "Turing prize worthy research problems in Educational Data Mining" at the International Conference on Educational Data Mining.

Baker, R.S. (2023) Participation in Panel "AI, Machine Learning, and Equity in Education Research, Policy, and Practice" at the Education Leadership Data Analytics 2023 Conference.

Baker, R.S. (2023) Core Methods in Educational Data Mining. Tutorial at the International Conference on Educational Data Mining.

Baker, R.S., Esbenshade, L., Vitale, J.M., Karumbaiah, S. (2023) Using Demographic Data as Predictor Variables: a Questionable Choice. Journal track presentation at the International Conference on Educational Data Mining.

Esbenshade, L., Baker, R.S., Vitale, J. (2023) From a Prediction Model to Meaningful Reports in School. Paper talk and poster presentation at the Education Leadership Data Analytics 2023 Conference.

Baker, R.S. (2023) Participation in Panel "Using AI in Educational Assessment" at Workshop on Artificial Intelligence in Education, University of Florida.

Baker, R.S. (2023) Participation in Roundtable "Graduate Programs in Learning Analytics Workshop: Core Competencies, Curriculum, and Instruction", Annual Meeting of the American Educational Research Association.

Kizilcec, R., Baker, R. (2023) The Behavioral Intervention Research Infrastructure (BIRI). Presentation at Workshop on Participatory Co-Design of Platform-Embedded Learning Experiments, International Conference on Learning Analytics and Knowledge.

Slater, S., Baker, R. (2023) Applied Natural Language Processing Techniques for Graph Interpretation and Design in Biology. Invited presentation at the Lowering the Technical Barriers to Trustworthy NLP Workshop, International Conference on Learning Analytics and Knowledge.

Zhang, J., Baker, R. (2023) Leveraging NLP to Detect Gaming the System in Open-ended Questions in a Math Digital Learning Game. Invited presentation at the Lowering the Technical Barriers to Trustworthy NLP Workshop, International Conference on Learning Analytics and Knowledge.

Baker, R.S. (2023) Participation in Panel "Explainable AI in Education", Empowering Learners.AI Conference.

Shah, M., Gouveia, C., Baker, R.S., Fuller, B., San Pedro, M.O.Z., Mee, C.L. (2023) HESI Exit Exam Policy, Performance, and NCLEX-RN Success: Findings from a Nationwide Validity Study. Presentation at Sigma's 34th International Nursing Research Congress.

Gouveia, C., Baker, R.S., Shah, M. (2023) Student Usage of HESI Compass and NCLEX-RN Outcomes. Presentation at Sigma's 34th International Nursing Research Congress.

Baker, R., Hutt, S., Mogessie, M., Andres-Bray, M. (2022) Tools for MOOC Data Analysis at the University of Pennsylvania. Invited talk, community meeting, International Conference on Computers in Education.

Baker, R.S. (2022) Making learning visible: scalable, multisystem detection of self-regulation related to EF. Presentation in Panel "Creating Tools for Equitable Research and Development", *Society for Research on Educational Effectiveness 2022 Conference.*

Baker, R.S., Hawn, M.A. (2022) Algorithmic Bias in Education. Encore paper presentation at *Workshop on Fairness, Accountability, and Transparency in Educational Data, EDM2022*.

Baker, R.S., Hawn, M.A. (2022) Algorithmic Bias in Education. Journal track presentation at *International Conference on Artificial Intelligence and Education*.

Karumbaiah, S., Ocumpaugh, J., Baker, R.S. (2022) Context Matters: Differing Implications of Motivation and Help-Seeking in Educational Technology. Journal track presentation at *International Conference on Artificial Intelligence and Education*.

Baker, R.S., Nasiar, N., Ocumpaugh, J.L., Hutt, S., Andres, J.M.A.L., Slater, S., Schofield, M., Moore, A., Paquette, L., Munshi, A., Biswas, G. (2022) Affect-Targeted Interviews for

Understanding Student Frustration. Extended reprise talk, IAALDE Best Paper Exchange Session, International Society of the Learning Sciences Annual Meeting.

Hutt, S., Baker, R.S., Mogessie, M., Valayaputtur, H. (2022) Tools for MOOC Data Analysis and Experimentation at the University of Pennsylvania. Demo at 23rd International Conference on Artificial Intelligence in Education.

Kia, F.S., Baker, R.S., Teasley, S. (2022) Beyond Questionnaires: Measuring Self-Regulated Learning Using Multichannel Trace Data in a Learning Management System. Presentation in the Symposium Authenticating the Signal: Validating Digital Traces of Student Learning Using Concurrent, Corroborating Data Sources at the Annual Meeting of the American Educational Research Association.

Gouveia, C., Baker, R.S., Shah, M., Snow, E. (2022) HESI Compass: Evidence of Growth in Nursing Students' NCLEX-RN Readiness. Presentation at the 33rd International Sigma Nursing Research Congress. July, 2022.

Baker, R.S. (2021) Assessment of complex and ill-defined competencies through machine learning. Invited talk, National Board of Medical Examiners Natural Language Processing Conference. November 2, 2021.

Ocumpaugh, J., Hutt, S., Baker, R., Andres, A., Biswas, G., Paquette, L., Bosch, N. (2021) Quick Red Fox: Optimizing Computer Assisted Direct Observation to Capture Theoretically-Aligned Student Experiences. Presentation at the ACM Special Interest Group on Design of Communication.

Baker, R.S. (2021) Participation in Panel: Frontiers of AIEd Research. High Touch High Tech (HTHT) Conference on Artificial Intelligence and Education. June 30, 2021.

Baker, R.S. (2021) Q&A with Ryan Baker. Session at Digital Education for a Strong Recovery: A Forward Look: An International Conference Organised by the OECD Centre for Educational Research and Innovation. June 10, 2021.

Baker, R.S. (2021) Informing Adaptive Learning. Invited presentation at the World Artificial Intelligence Conference.

Baker, R.S., Hawn, M.A. (2021) From Algorithmic Bias to Fairer Automated Algorithms in Education. In session Towards "Next Generation" Affirmative and Formative Assessments for Learning, and in the Service of Learning. E.W. Gordon Centennial Conference. June 3, 2021.

Baker, R.S. (2021) Participation on Panel "Building a Multidimensional Future: A Conversation on Big Data and Educational Measurement". National Council on Measurement in Education Annual Meeting, Special Interest Groups in Measurement in Education. June 1, 2021.

Baker, R.S. (2021) Participation on Panel "Self-Regulation and Online Learning". European Association for Research on Learning and Instruction, Metacognition Special Interest Group. May 19, 2021.

Baker, R.S., Agnihotri, L., Reed, A. (2021) Scaled rapid courseware development using preconfigured courses with instructor and student training modules. Presentation at Pandemic Pedagogy Research Symposium. May 5, 2021.

Baker, R.S. (2020) Data on Interactions Between Students and Online Environments: What do we Learn about Students? Invited presentation at EdCrunch. December 9, 2020.

Baker, R.S. (2020) Learning Analytics: Key Challenges for the Future of the Field. Invited presentation at EdCrunch. December 8, 2020.

Baker, R.S. (2020) Improving Automated Detection of Student Disengagement and Affect. Invited presentation at the NEURIPS 2020 Workshop Advances and Opportunities: Machine Learning for Education, 2020.

Baker R.S. (2020) Towards Learning Analytics on Training Data. Invited presentation to the NATO Training Group Task Group on Individual Training and Education Developments, 2020.

Baker, R.S. (2020) Adaptive Learning and Learning Analytics. Penn China Education Summit, 2020.

Baker, R.S. (2020) Participation on Panel, "Internet Plus Education – the New Wave of Educational Technologies in 2020". Penn China Education Summit, 2020.

Baker, R.S. (2020) Participation on Panel, "Applications of Learning Science to Educational Practice During the Pandemic." IMS Global Learning Consortium, 2020.

Agnihotri, L., Baker, R.S. (2020) Study on Procrastination. CLO Virtual Exchange, 2020.

Baker, R.S. (2020) Leveraging Data to Improve Learning in the Next Normal. Ed Tech Week, 2020.

Baker, R.S. (2019) Participation on Panel "Education Technology". Penn China Education Summit, 2019.

Baker. R.S. (2019) Participation on Panel "Learning Analytics Experts Discussion". iFEST 2019.

Baker. R.S. (2019) Participation on Panel "Improving Students' Learning in Control Education with Data- and Feedback-Driven Methodologies". International Federation of Automatic Control – Advances in Control Education Symposium.

Baker, R.S. (2019) Participation on Panel "Learning Sciences: Design and analysis strategies that promote inclusion and increase access". International Conference on Learning Analytics and Knowledge.

Baker, R.S. (2019) Participation on Panel "Learning Science Truths All Educators Should Know". South by Southwest EDU.

Baker, R.S., D'Mello, S.K., Kai, S., Bosch, P.N., Ocumpaugh, J.L., Shute V. (2019) Affect Detection in Physics Playground. Poster at Technology, Instruction, Cognition, & Learning SIG, American Educational Research Association Conference.

Rowe, E., Asbell-Clarke, J., Baker, R.S. (2019) Game-Based Measures of Implicit Learning. Poster at American Educational Research Association Conference.

Baker, R.S., Koedinger, K.R. (2019) Educational Data Mining: Proof Cases. Presentation at American Educational Research Association Conference.

Baker, R.S., Koedinger, K.R. (2019) Demonstrating the Value of Educational Data Mining. Presentation at National Council on Measurement in Education.

Baker, R.S. (2019) Session Discussant, Game-Based Assessment: How Has the Field Matured Over the Past 10 Years? American Educational Research Association Conference.

Baker, R.S. (2019) Session Discussant, Testing Strategies, Extended Time Accommodation, and Speededness, Using Process Data in NAEP. National Council on Measurement in Education.

Karumbaiah, S., Baker, R.S. (2019) Predicting Quitting in Students Playing a Learning Game. Presentation at the Bay Area Learning Analytics Network Conference. March 2, 2019.

Baker, R.S. (2018) Measuring Classroom Engagement with BROMP. Breakout session. Alef Education Symposium. Abu Dhabi, United Arab Emirates. October 31, 2018.

Baker, R.S. (2018) Participation in panel A Look into the Future: Contributions from our Societies. London Festival of Learning. London, UK.

Baker, R.S. (2018) Participation in panel Measuring the Impact of Innovative Technologies in Education. International Conference on the Learning Sciences. London, UK.

Baker, R.S. (2017) Participation in panel Learning Analytics. Reimagine Education 2017. Philadelphia, PA.

Baker, R.S. (2017) Participation in panel Technology in Education. 4th Annual NAEP Innovations Symposium. Washington, DC.

Baker, R.S. (2017) Presentation in panel How is Learning Science Research Advancing Innovation in Teaching and Learning? Educause Annual Conference. Philadelphia, PA.

Wang, Y., Baker, R.S. (2017) Beyond Sampling: Exploring how students use MOOCs minimally. Presentation at the 4th Learning with MOOCs Conference. Austin, TX.

Baker, R.S. (2017) Boredom Detection using Data. Presentation at the Northern Kentucky University Research and Innovation Symposium in Education. Highland Heights, KY.

Baker, R.S. (2017) Ethical, Privacy, and Practical Limitations for Learning Analytics. Presentation at the DIMACS/Northeast Big Data Hub Workshop on Privacy and Security for Big Data. Piscataway, NJ.

Baker, R.S. (2017) Building a Masters Level Program. Invited Presentation at the Building the Learning Analytics Curriculum Workshop, LAK 2017.

Baker, R.S. (2017) Data Science for Educational Research, Industry, and Policy. Invited Presentation at the 9th Data Science Showcase. New York, NY.

Baker, R. (2017) Towards Massive Replication using Data From Massive Online Open Courses. Presentation at the Subway Summit. New York, NY.

Baker, R.S. (2016) Participation in panel Running a Learning Analytics Centre: Stories & Conversations. At Australian Learning Analytics Summer Institute.

Baker, R.S. (2016) Participation in panel Deeper Dive into Assessment Strategies/Types and LA. At Understanding the Role of Learning Analytics in Technology-Enhanced Education. New York University. New York, NY.

Baker, R.S. (2016) Integrating Knowledge Engineering with Data Mining in Measuring Engagement. Invited talk at the 16th Annual Maryland Assessment Conference. College Park, MD.

Baker, R.S. (2016) Measuring Affect and Affect Dynamics in Simulations. Invited talk, Workshop on Machine Learning for Digital Education and Assessment Systems. International Conference on Machine Learning. New York, NY.

Baker, R.S. (2016) Participation in session Information Technologies to Advance Teaching and Learning, at Conversations with Innovators. Philadelphia, PA.

Baker, R.S. (2016) Modeling Complex Skill with Educational Data Mining. Invited talk, International Conference on e-Learning in the Workplace. New York, NY.

Baker, R.S. (2016) Participation in Panel "New Technologies and the Future of Learning Experiences". International Conference on e-Learning in the Workplace. New York, NY.

Baker, R.S. (2016) Comments on the Symposium: "Exploring Timing and Process in Large-Scale Assessments". 2016 Annual Meeting of the National Council on Measurement in Education.

Baker, R.S. (2016) Interaction logs: a powerful tool for studying engagement and learning in a very fine-grained fashion. Invited Presentation at International Perspectives on School Governance: A German-American Seminar. 2016 Annual Meeting of the American Educational Research Association. Washington, DC.

Wang, Y., Baker, R. (2015) Content or Platform? An Alternative Way to Understand MOOC Students. Presentation at Learning with MOOCS II. New York, NY.

Wang, Y., Baker, R., Aleven, V., Rose, C., Sewall, J., Popescu, O., Tomar, G., Feschke, O., Cennamo, M. (2015) Interactive Activities in MOOCs. Poster Presentation at Learning with MOOCS II. New York, NY.

Baker, R.S. (2015) Deep Dive: Models and Design. 12th Annual Online Learning Consortium Blended Learning Conference and Workshop 2015. Denver, CO.

Baker, R.S. (2015) Learning Analytics on a MOOC on Learning Analytics. Invited talk at the V. Jornadas eMadrid sobre "Educacion Digital". Madrid, Spain.

San Pedro, M.O.Z., Baker, R.S., Bowers, A.J., Heffernan, N.T. (2015) Predicting College Enrollment from Machine-Learned Assessments of Knowledge, Academic Emotions and Behavior Within an Educational Software. Poster presentation at the 9th Annual Machine Learning Symposium at the New York Academy of Sciences.

Baker, R.S. (2015) O papel de Big Data na transformação da avaliação e do currículo escolar: exemplos de sucesso. 4o seminario internacional: Centro Lemann para Empreendedorismo e Inovacao na Educacao Brasileira. Centro Lemann em Stanford University.

Baker, R.S. (2014) Panel presentation at Inaugural Meeting of the Global Learning Council. Pittsburgh, PA.

Baker, R.S. (2014) Panel presentation at 2nd Annual Executive STEM Summit: Science of Learning. New York, NY.

Wang, Y., Baker, R.S. (2014) MOOC Learner Motivation and Course Completion. Panel presentation at Learning with MOOCs: A Practitioner's Workshop. Cambridge, MA.

Baker, R.S. (2014) Participation in session Invention and Innovation: Revealing the Intangibles of Learning, at Conversations with Innovators. Philadelphia, PA.

Baker, R.S. (2014) Panel presentation at Moocshop 2014 (the 2nd Research-Oriented Workshop on Massive Open Online Courses), at International Conference of the Learning Sciences.

Baker, R.S., Ocumpaugh, J.L., San Pedro, M.O.C.Z., Gowda, S.M., Gowda, S.M. (2014) Studying Student Affect in Computer-Based Learning Environments with Field Observations and Log Files. Panel presentation at American Educational Research Association 2014.

Carvalho, A.M.J, Stahelin, N., Baker, R.S.J. (2014) An Integrative Program Modeling Authentic Field Science Experiences for Students. Presentation at the 43rd North American Association of Environmental Education.

Baker, R.S. (2014) Toward Demonstrating the Value of Learning Analytics for Education. Invited panel presentation at American Educational Research Association 2014.

Baker, R.S.(2014) Invited panel "What is the Future of Online Research Opportunities and the Practical Implications at Scale?". AERA Technology, Instruction, Cognition and Learning Special Interest Group, American Educational Research Association 2014.

Sao Pedro, M.A., Gobert, J.D., Baker, R. (2014) The Impacts of Automatic Scaffolding on Students' Acquisition of Data Collection Inquiry Skills. Roundtable presentation at American Educational Research Association 2014.

Baker, R.S. (2014) What You Can Do With the Data Exhaust. Invited panel presentation at the Online Learning Summit. University of California, Berkeley.

Baker, R.S. (2014) Big Data in Training and Education. Webinar panel for Harrisburg University.

Baker, R. (2013) Learning Analytics. Panel presentation at Ithaka Sustainable Scholarship 2013.

Baker, R.S.J.d. (2013) Towards Using Educational Data Mining to Improve the Assessment of Student Understanding of Ecology. Symposium Presentation at the Annual Meeting of the Ecological Society of America.

Baker, R.S.J.d. (2013) Culture and Technology. Panel presentation at the 16th International Conference on Artificial Intelligence and Education.

Baker, R.S.J.d. (2013) Building the Educational Data Scientist. Panel presentation at the 2013 Learning Analytics Summer Institute.

Koedinger, K.R., Baker, R.S.J.d. (2013) Data Mining and Intelligent Tutors. Invited presentation at the 2013 Learning Analytics Summer Institute.

Asbell-Clarke, J., Rowe, E., Sylvan, E., Baker, R.S.J.d. (2013) Working through Impulse: Assessment of Emergent Learning in a Physics Game. Symposium presentation at the 9th International Conference on Games, Learning, and Society.

Baker, R.S.J.d. (2013) Multi-Faceted Assessment During Online Learning. Invited Presentation at Distance Education & Online Learning in Physics Workshop of the American Physical Society.

Baker, R.S.J.d. (2013) Future Technologies, Today. Invited Presentation at Apps that Close the Gap Summit.

Baker, R.S.J.d. (2013) Educational Data Mining: Potentials and Possibilities. Symposium presentation at the 2013 Annual Meeting of the American Educational Research Association.

Roll, I., Baker, R. (2013) Using Learning Analytics to Inform Theories of Help-Seeking. Symposium presentation at the 2013 Annual Meeting of the American Educational Research Association.

Gobert, J., Sao Pedro, M., Raziuddin, J., Baker, R. (2013) Developing And Validating EDM-Based Assessment Measures For Measuring Science Inquiry Skill Acquisition And Transfer Across Science Topics. Symposium presentation at the 2013 Annual Meeting of the American Educational Research Association.

Wixon, M., Gobert, J., Baker, R.S.J.d., Bachmann, M. (2013) WTF (Without Thinking Fastidiously) as Predicted by Student Learner Characteristics. Symposium presentation at the 2013 Annual Meeting of the American Educational Research Association.

Baker, R.S.J.d. (2013) We Need More Education Data Scientists. Symposium presentation at the Third International Conference on Learning Analytics and Knowledge.

Baker, R.S.J.d. (2013) Educational Data Mining Essentials. Presentation at Sims and Games Learning Analytics and Educational Data Mining Workshop.

Baker, R.S.J.d. (2012) Show Me The Data: What Automated Detectors Can (and Can't) Do. Invited presentation at the Engagement and Academic Tenacity Convening. Cambridge, MA, USA.

Blikstein, P., Worsley, M., Sherin, B., Baker, R., Berland, M., Martin, T., Roll, I., Aleven, V., Koedinger, K., Hershkovitz, A. (2012) Building Bridges between Learning Analytics, Educational Data Mining, and Core Learning Sciences Perspectives. Symposium at the 10th International Conference of the Learning Sciences.

Baker, R.S.J.d. (2011) Tracking Student Engagement during Learning from Educational Software. Invited presentation at the Massachusetts STEM Summit.

Gobert, J.D., Baker, R.S.J.d., Sao Pedro, M. (2011) Using Machine-Learned Detectors to Assess and Predict Students' Inquiry Performance. Presentation at the 2011 Fall Meeting of the Society for Research on Educational Effectiveness.

Baker, R.S.J.d. (2011) Observational and Log Analysis Methods for Assessing Engagement and Affect in Educational Games. Presentation at Games for Learning Day at Games For Change 2011.

Hausmann, R.G.M., Youngblood, M., Lane, H.C., Baker, R.S.J.d. (2011) Game-Based Intelligent Tutoring Systems. Panel session at FLAIRS-24.

Castro, M.J., Cárdenas, E.S., Ogan, A., Baker, R.S.J.d. (2011) Tutor Cognitivo y el incremento de aprendizaje en matemática. (Cognitive Tutors and Learning Gains in Mathematics). *CIAEM 2011: XIII Conferencia Interamericana de Educación Matematica.*

Gobert, J.D., Montalvo, O., Toto, E., Sao Pedro, M., Baker, R.S.J.d. (2010) The Science Assistments Project: Scaffolding Scientific Inquiry Skills. Interactive Event at *10th International Conference on Intelligent Tutoring Systems.* **[People's Choice Award for Best Interactive Event]**

Goldstein, A.B., Baker, R.S.J.d., Heffernan, N.T. (2010) Pinpointing Learning Moments: A finer grain P(J) model. Poster abstract. *Proceedings of the 3rd International Conference on Educational Data Mining,* 289-290.

Baker, R.S.J.d., de Carvalho, A.M.J.B., Raspat, J., Aleven, V., Corbett, A.T., Koedinger, K.R. (2010) Using Taxonomies and Educational Data Mining to Understand How Educational Software Design Impacts Gaming the System. Presentation at Symposium at the 2010 Annual Meeting of the American Educational Research Association.

Lee, D.M.C., Ramos, C.C., Sy, C.W.C., Rodrigo, M.M.T., Baker, R.S.J.d. (2010) Detecting Boredom and Confusion among Novice Programmers using BlueJ Compile Logs. Poster at Philippine Computing Society Congress 2010.

Baker, R.S., Corbett, A.T., Aleven, V. (2009) Determining when an error is actually a slip. Presentation in Educational Data Mining: Seeing How Students Really Err. Symposium at the 13th Biennial Conference of the European Association for Research on Learning and Instruction.

Rodrigo, M.M.T., Baker, R.S.J.d., Abalos, N., Bacuyag, K., Basuel, B., Bautista, M., Cortez, M., Dulla, G., Elomina, S., Gineta, M.A., Rara, A., Rodriguez, R., Sanggalang, J., Sugay, J., Tan, A.K., Tan, M., Trajano, E., Uy, F., Victorino, N., Villaflor, K. (2009) A comparison of learners' affect and behaviors while using an intelligent tutor and an educational game. Presentation at Philippine Computing Society Congress 2009.

Rodrigo, M.M.T., Baker, R.S., Sugay, J.O., Tabano, E. (2009) Monitoring novice programmer affect and behaviors to identify learning bottlenecks. Presentation at Philippine Computing Society Congress 2009.

Baker, R.S.J.d., Koedinger, K.R. (2008) Educational Data Mining: Opportunities for the International Internet Classroom. Presentation at *AAAI Fall Symposium: Education Informatics: Steps Towards the International Internet Classroom.*

Baker, R.S.J.d, Aleven, V., Koedinger, K.R., Rodrigo, M., Heffernan, N.T., Corbett, A.T., Roll, I. (2008) Gaming the System: Evidence from Data Mining and Human Observation on Affect, Attitudes, and Learning. Presentation at *Technology, Instruction, Cognition, and Learning Symposium*.

Koedinger, K.R., Aleven, V., Baker, R.S.J.d., Roll, I. (2007) Toward Understanding When Tutoring Meta-Cognition Enhances Domain Learning. *Workshop on Metacognition and Self-Regulated Learning in Intelligent Tutoring Systems*, 1-2.

Baker, R.S. (2006) Educational Data Mining. Panel "Intelligent Tutoring Scales Up!" at *8th International Conference on Intelligent Tutoring Systems*.

Koedinger, K.R., Baker, R.S. (2006) Production Systems. *Presentation at the TICL Masters Conference*.

Baker, R.S., Beck, J.S. (2005) Psychometric Machine-Learned Models. *Presentation at the Educational Data Mining Workshop at the annual meeting of the American Association for Artificial Intelligence*.

Rosé, C.P., Anthony, L., Baker, R.S., Corbett, A.T., Pain, H., Porayska-Pomsta, K. (2004) Towards Encouraging a Learning Orientation Above a Performance Orienation. Panel at *7th International Conference on Intelligent Tutoring Systems,* 907.

Baker, R.S., Corbett, A.T., Koedinger, K.R. (2003) Statistical Techniques For Comparing ACT-R Models of Cognitive Performance. *Proceedings of the 10th Annual ACT-R Workshop*, 129-134.

Baker R.S., Corbett A.T., Koedinger K.R. (2002) Distinct Errors Arising From a Single Misconception. Published as abstract, *Proceedings of the Cognitive Science Society Conference*, 990.

Baker R., Parberry I. (1996) Increasing Frame Rate In An Interactive Sprite Engine. Published as abstract, *Texas Academy of Science Conference*.

Humor Articles

Baker, R.S. (2002) The Sleep-Retardant Properties of My Ex-Girlfriend. *Annals of Improbable Research, 8* (3), 9-11. Re-printed in *American Physical Society (APS) News*, February 2004, 13 (2)

Baker, R.S., Baker, R.S., Baker, R.S. (2002) Collaborative Research Across Alternate Universes. *Psychology Postgraduate Affairs Group Quarterly.*

Other Publications

Maheshwari, A., Baker, R., Banerjee, S. (2024) Top Parent's Journey in Transforming Early Childhood Education for Low-income Families. Guest article, Central Square Foundaton.

Baker, R.S. (2021) To Make a Difference with Learning Technology, Focus on How it Will Be Used. Guest column, Educational Technology Digest.

Baker, R.S. (2023) *Big Data and Education.* Online open textbook.
1st edition (2013); 2nd edition (2015); 3rd edition (2017); 4th edition (2018); 5th edition (2019); 6th edition (2020); 7th edition (2023)
http://www.upenn.edu/learninganalytics/MOOT/bigdataeducation.html

Baker, R.S. (2018) *Knowledge Inference and Structure Discovery for Education.* Self-paced MOOC.

Ocumpaugh, J., Baker, R.S., Rodrigo, M.M.T. (2015) *Baker Rodrigo Ocumpaugh Monitoring Protocol (BROMP) 2.0 Technical and Training Manual..* Technical Report. New York, NY: Teachers College, Columbia University. Manila, Philippines: Ateneo Laboratory for the Learning Sciences.

Ocumpaugh, J., Baker, R.S.J.d., Rodrigo, M.M.T. (2012) *Baker-Rodrigo Observation Method Protocol (BROMP) 1.0. Training Manual version 1.0.* Technical Report. New York, NY: EdLab. Manila, Philippines: Ateneo Laboratory for the Learning Sciences.

Baker, R.S.J.d. (2012). Guessing and Learning. In N.M. Seel (Ed.), *Encyclopedia of the Sciences of Learning* (pp. 1397-1398). Heidelberg, Germany: Springer-Verlag.

Baker, R.S.J.d. (2012). Guessing Model. In N.M. Seel (Ed.), *Encyclopedia of the Sciences of Learning* (pp. 1398-1399). Heidelberg, Germany: Springer-Verlag.

PATENTS

Gobert, J., Baker, R. S., Sao Pedro, M. (awarded, June 21, 2016). Inquiry Skills Tutoring System. US Patent no. 9373082.

Gobert, J., Sao Pedro, M., Betts, C., & Baker, R.S. (awarded, February 7, 2017). Inquiry Skills Tutoring System (Child Patent for Alerting System). US Patent no. 9564057.

GAMES

Baker, R.S., Baker, M.T. (2015) *Academic Squabble.*
http://www.columbia.edu/~rsb2162/AcademicSquabble/academic-squabble.html

Baker, R.S., LaPointe, F. (1992) *Crunch!*

INVITED SEMINARS/CONFERENCE PLENARY TALKS

Partnering with an LLM for Qualitative Coding of Educational Data. University of Virginia School of Education & Human Development. May 12, 2025.

Using Large Language Models to Support Learners and Learning. University of Virginia School of Education & Human Development. February 15, 2025.

Using Large Language Models to Support Learners and Learning. Keynote, Conference on Advancing AI in Science Education (AASE). AI4STEM Education Center, University of Georgia. February 3, 2025.

Using Large Language Models to Support Learners and Learning. Keynote, Higher Education in the Age of Artificial Intelligence (AI): Challenges and Perspectives, University of Oujda, Morocco. December 18, 2024.

Human-LLM Partnership for Qualitative Coding of Educational Data. Keynote, International Conference on Education and E-Learning. November 24, 2024.

O Bias em Algoritmos de Inteligencia Artificial Aplicados à Educação. Keynote, Congresso Brasileiro de Informática na Educação. November 7, 2024.

Masterclass on 'Data-driven decision making for EdTechs'. Central Square Foundation. October 21, 2024.

Using Large Language Models to Support Learners and Learning. Keynote, Assessment and Teaching Conference, University of Pittsburgh. October 4, 2044.

Large Language Models to Improve Feedback in Online Higher Education. Keynote, 6th International Conference on Higher Education Learning Methodologies and Technologies Online. September 25, 2024.

Using Large Language Models to Support Learners and Learning. Keynote, International Conference on Big Data in Education. September 25, 2024.

Using Large Language Models to Support Learners and Learning. Centre for the Study of Higher Education, University of Melbourne. August 16, 2024.

JeepyTA: Using a Large Language Model to Support Tertiary Instructors and Students. Keynote, ASK4AI Melbourne Summit, Melbourne, Victoria, Australia. August 15, 2024.

Towards Human-LLM Partnership for Qualitative Coding. Faculty of Information Technology, Monash University. August 14, 2024.

Using Large Language Models to Support Learners and Learning. School of Electrical Engineering and Computer Science, University of Queensland. August 13, 2024.

Using Large Language Models to Support Learners and Learning. UniSA Education Futures, University of South Australia. August 8, 2024.

Using Large Language Models to Support Learners and Learning. Basser Seminar, School of Computer Science, University of Sydney. August 6, 2024.

Human-LLM Partnership for Qualitative Coding. RTI International. July 23, 2024.

Artificial Intelligence in Research. Keynote, Annual Doctoral Student Association (DSA) Conference, Franklin University. June 21, 2024.

Using Large Language Models to Code Qualitative Data and Act as a Teaching Assistant. College of Education and Human Development, University of Delaware. May 8, 2024.

Detector-Driven Classroom Interviewing: Focusing Qualitative Researcher Time by Selecting Cases in Situ. IES Predoctoral Seminar, University of Pennsylvania. April 5, 2024.

Baker, R.S. (2024) Recent work on large language models in education at the PCLA. Keynote talk at the Workshop on Generative AI for Learning Analytics (GenAI-LA): Exploring Practical Tools and Methodologies, LAK2024. March 17, 2024.

Algorithmic Bias: The State of the Situation Worldwide. Inaugural talk, African Network for Learning Analytics Research. February 29, 2024.

Using Large Language Models to Assess Students and Code Qualitative Data. School of Information, University of British Columbia. February 26, 2024.

De-Identifying Student Personally Identifying Information with GPT-4. Million Tutor Moves Observatories Meeting. February 23, 2024.

JeepyTA and Qualitative Coding: Recent work on large language models in education at the PCLA. Keynote talk, The Learning Ideas Conference Winter Online Event. February 15, 2024.

Inteligencia Artificial Generativa y Educación: Lo Nuevo y Lo Que Podemos Hacer. Keynote, Institute for the Future of Education Conference. Monterrey, Mexico. January 24, 2024.

Como a IA Gerativa pode apoiar o processo de avaliação? Centre for AI and Education in Brazil, Recife, Pernambuco, Brasil (virtual). October 26, 2023.

Algorithmic Bias in Education: The Problem and the Debate About What to Do. Cornell University, Department of Information Science. October 25, 2023.

Recent work on large language models in education at the PCLA. American Institutes for Research. October 23, 2023.

An Introduction to LLMs: Really Abridged Version. Center for Research on Complex Thinking, University of Wisconsin. September 13, 2023.

Foundation Models and Large Language Models in Higher Education. University of Utah, College of Social and Behavioral Sciences (virtual presentation). August 21, 2023.

When Might a Detector Generalize? Keynote, International Conference on Big Data and Education. Jinan, China (virtual keynote). June 17, 2023.

Potential of Data Mining in Education. St. Paul University Philippines School of Nursing and Allied Health Sciences (virtual presentation). June 1, 2023.

Detecting SMART Model Cognitive Operations in Mathematical Problem-Solving Process. Gordon Seminar on Assessment in the Service of Learning. February 17, 2023.

When Might a Detector Generalize? Keynote, International Conference on Computers in Education. Kuala Lumpur, Malaysia. November 30, 2022.

Iterative Refinement of an AIS Rewards System. SIGCSE Seminar, University of Delaware. November 11, 2022.

Big Data and Education. Invited talk, EdTech Forum. September 22, 2022.

Learning Engineering aka So You Want to Make your Professional Learning System Better. Brown Bag Seminar, The Research Partnership for Professional Learning. September 20, 2022.

Algorithmic Bias in Education. Invited talk, 5th Impact Summit. August 13, 2022.

Investigations into Deep Knowledge Tracing: From Cold-Start to Real Life. Invited talk, AIED Summer Camp, Central China Normal University. June 27, 2022.

Data-driven classroom interviews, rapid observations, and interaction detectors: Modern mixed methods at the Penn Center for Learning Analytics. Invited seminar, Convergence Research Center for Immersive Learning Technology, Chonnam University. June 23, 2022.

Algorithmic Bias in Education. Keynote, The Learning Ideas Conference. June 17, 2022.

Learning Engineering aka So You Want to Make Your Learning System Better. Invited seminar at OnDeck EdTech. March 1, 2022.

Opportunities for Learning Engineering: Findings from an Asynchronous Virtual Convening. Keynote at International Conference on Big Data and Education. February 26, 2022.

Algorithmic Bias in Education. Keynote talk, 2021 International Conference on Artificial Intelligence and Big Data in Education. November 16, 2021.

Algorithmic Bias in Education. Keynote talk, Learning Analytics Workshop at DELFI2021. September 13, 2021.

Investigations into Deep Knowledge Tracing: From Cold-Start to Real Life. Keynote, 25th Global Chinese Conference on Computers in Education. September 13, 2021.

Longitudinal Implications of Wheel Spinning and Productive Persistence. Webinar, Asia-Pacific Society for Computers in Education. September 10, 2021.

Algorithmic Bias in Education: From Unknown Bias to Known Bias to Fairness to Equity. Responsible Data Science and AI Speaker Series, University of Illinois Urbana-Champaign. September 10, 2021.

Quick Red Fox: Optimizing Classroom Interviews with SRL and Affect Detection. Learning Analytics Learning Network. August 16, 2021.

Informing Adaptive Learning. Invited talk, World Artificial Intelligence Conference 2021. July 8, 2021.

Opportunities for Learning Engineering and Educational Data Mining: Findings from an Asynchronous Virtual Convening. Keynote, Learner Data Institute Workshop at the International Conference on Educational Data Mining. June 29, 2021.

Automated Detection of Computational Thinking from Gameplay (with Elizabeth Rowe and Mia Almeda). Colloquium talk, Computing Education Reading Group, Brown University. June 22, 2021.

Modalegem profunda de conhecimento (deep knowledge tracing): uma extensão para inferir conhecimento interpretável e predizer fora do sistema. Colloquium talk, Programa de Pós-graduação em Computação Aplicada, Universidade do Vale do Rio dos Sinos (Unisinos). May 27, 2021.

Algorithmic Bias in Education (with M. Aaron Hawn). Learning Analytics Learning Network. May 25, 2021.

Learning Analytics: Potential for Transformation in Education and Educational Research. Invited colloquium talk at the Education University of Hong Kong. May 20, 2021.

Six Challenges for the Future of Artificial Intelligence in Education. Education Data Science Undergraduate Fellowship, University of California, Berkeley. April 17, 2021.

Six Challenges for the Future of Artificial Intelligence in Education. AAAI Spring Symposium on Artificial Intelligence for K-12 Education. March 22, 2021.

Learning Analytics. Center for Teaching and Learning. Chung-Ang University. January, 2021.

Six Challenges for the Future of Artificial Intelligence in Education. Department of Computer Science. North Carolina State University. December 15, 2020.

Learning Analytics: Potential Opportunities for e-Learning in the Workplace. Keynote at the 2020 Conference of the Korea Association of Human Resources Development. October 24, 2020.

Data Mining: Potentials for Education. Keynote at EnlightenEd. October 22, 2020.

Feature Engineering: Better, More Interpretable Models. Learning Analytics Learning Network. August 24, 2020.

Six Challenges for the Future of Artificial Intelligence in Education. Intelligent Adaptive Learning Webinar Series, East China Normal University. July 24, 2020.

The State of Educational Data Mining in 2009 and Today: Then, Now, and Forward. Prof. Ram Kumar Educational Data Mining Test of Time Award Talk. July 13, 2020.

Potential Opportunities for e-Learning in the Workplace. Keynote talk at the International Conference on e-Learning in the Workplace. June 10, 2020.

The Dynamics of Affect in Online Learning. Department of Educational Psychology, University of Wisconsin. February 4, 2020.

Challenges for the Future of Artificial Intelligence in Education. Alelo Webinar Series on the Future of AI in Education and Training. October 16, 2019.

Educational Data Mining and Learning Analytics. Cengage. September 5, 2019.

Educational Data Mining and Learning Analytics for Researching and Assessing Learning. Lynch School of Education and Human Development, Boston College. March 26, 2019.

Some Challenges for the Next 18 Years of Learning Analytics. Keynote address, 9th International Conference on Learning Analytics. March 6, 2019.

Some Challenges for the Next 18 Years of Learning Analytics. School of Information, University of Michigan. February 26, 2019.

Towards Development of Better Real-Time Sensor-Free Detectors of Affect. Educational Technology Department, Indian Institute of Technology Bombay (remote talk). February 15, 2019.

Learning Analytics: Potentials for Future K-12 Classroom Assessment. Keynote address, KICE (Korea Institute for Curriculum and Evaluation) International Seminar: New Direction for Educational Assessment in 2030 Korea. Seoul, South Korea. November 23, 2018.

Learning Analytics: Promises and Limitations. Department of Education, Seoul National University. November 22, 2018.

Learning Analytics: Potential for Transformation in Education. Alef Education Symposium. Abu Dhabi, United Arab Emirates. October 31, 2018.

Big Data and Education. Teach for All (webinar). October 29, 2018.

The Dynamics of Affect in Online Learning. Concord Learning Seminar (webinar), Concord Consortium. October 17, 2018.

Learning Analytics: Promises and Limitations. Center for Teaching Advancement and Assessment Research, Rutgers University. October 15, 2018.

Towards Understanding App Effectiveness and Cost. Making Data C.A.R.E: BrightBytes Big Data Summit 2018. Cedar Creek, TX. October 11, 2018.

The Dynamics of Affect in Online Learning. Office of Open Learning xTalk, Massachusetts Institute of Technology. September 26, 2018.

Leveraging Educational Data Mining Techniques to Determine Factors Impacting Military-Connected Students. Distinguished Lecture (with Andrew Berning), 20th Annual National Training Seminar, Military Child Education Coalition. Washington, DC. July 24, 2018.

Studying Carelessness in Online Learning. American Institutes for Research. July 11, 2018.

Towards Massive Replication of Scientific Findings in Massive Online Open Courses. University of North Texas. February 1, 2018.

Data Mining in Education. TERC. January 29, 2018.

Towards Development of Better Real-Time Sensor-Free Detectors of Student Affect. Washington University in St. Louis. January 19, 2018.

Towards Massive Replication of Scientific Findings in Massive Online Open Courses. Massachusetts Institute of Technology, Teaching Systems Laboratory. December 1, 2017.

Long-Range Predictions of Student Success. LRNG Brown Bag Webinar. November 9, 2017.

Towards Massive Replication of Scientific Findings in Massive Online Open Courses. St. John's University. November 6, 2017.

Turning Big Data into Big Benefits for Students. Keynote address, Tech and Learning Leadership Event. Denver, CO. October 26, 2017.

Towards Massive Replication of Scientific Findings in Massive Online Open Courses. Cognitive Science Colloquium, Indiana University. October 16, 2017.

Modeling Complex Skill in Open-Ended Learning. Webinar, Hewlett Foundation Assessment Cluster. October 5, 2017.

Towards Massive Replication of Scientific Findings in Massive Online Open Courses. University of Oklahoma. September 13, 2017.

Towards Faster Development of Better Affect Detectors. Intel. August 14, 2017.

Integrating Knowledge Engineering with Data Mining in Measuring Engagement. ACT, Inc. July 11, 2017.

Modeling wheel-spinning and productive persistence in middle school mathematics. ACT, Inc. July 11, 2017.

Towards Massive Replication of Scientific Findings in Massive Online Open Courses. University of Illinois Urbana-Champaign, National Center for Supercomputer Applications. April 14, 2017.

Ryanalytics: Using data to improve my scientific productivity and life. PIER Brown Bag Series, Carnegie Mellon University. Feb 28, 2017.

Predicting Short-Term Success and Longer-Term Participation from MOOC Engagement. PIER Speaker Series, Carnegie Mellon University. Feb 27, 2017.

Predicting Short-Term and Long-Term Success from MOOC Engagement. University of Michigan. February 6, 2017.

Discussion Forum and Interaction Data for Predicting Success from MOOCs. Featured speaker, 4th International Conference on Writing Analytics. January 13, 2017.

Learning Analytics and Educational Data Mining: Opportunities for Industry. Keynote address, Industrial Meeting on Big Data in Education in China. Beijing, China (remote presentation). January 10, 2017.

Modeling Complex Skill with Educational Data Mining. IEEE Signal Processing Society, Princeton/central New Jersey section. December 15, 2016.

Engagement and Success in Online Learning: Tertiary Education and Beyond. Keynote talk at Australasian Society for Computers in Learning in Tertiary Education. November 28, 2016.

Massive Replication of Scientific Findings in Massive Online Open Courses. Keynote talk at Australian Learning Analytics Summer Institute. November 27, 2016.

Modeling Complex Skill with Educational Data Mining. Center for Research on Learning and Instruction. University of Sydney. November 25, 2016.

Ethical Applications of Learning Analytics in a Complex and Changing World. Connected Intelligence Center, University of Technology Sydney. November 24, 2016.

Learning Analytics in a Complex and Changing World. Teachers College, Columbia University. October 31, 2016.

Engagement and Success in Online Learning: Higher Education and Life-Long Learning. Rutgers University. October 19, 2016.

Engagement and Success in MOOCs. University of Oklahoma. August 1, 2016.

Engagement and Success in Online Learning: Higher Education and Beyond. LINK Research Lab, University of Texas Arlington. July 29, 2016.

Welcome. NY LASI (Learning Analytics Summer Institute) Local 2016. New York, NY. June 27, 2016.

Data Mining in Education. Data Science in Education Meetup. Boston, MA. June 20, 2016.

Learning Analytics – Key Considerations. Invited talk at Quality Assurance Agency Scottish Higher Education Enhancement Committee Learning Analytics Briefing. Edinburgh, Scotland. May 2, 2016.

Long-Term and Actionable Prediction of Student Outcomes Using Automated Detectors of Engagement and Affect. Moray House School of Education, University of Edinburgh. May 2, 2016.

Using Learning Analytics to Study Engagement and Success in Higher Education. Faculty of Science and Engineering, University of Wolverhampton. April 26, 2016.

How We Learn. Future of Learning Forum, Columbia Business School, Columbia University. March 4, 2016.

Engagement and Success in Online Learning: Higher Education and Beyond. Center for Teaching and Learning. St. John's University. February 16, 2016.

Long-Term and Actionable Prediction of Student Outcomes Using Models that Infer Engagement and Affect Automatically From Online Learning Logs. Data Science Talk Series. Rutgers University Newark. February 5, 2016.

Learning Analytics and Educational Data Mining: Opportunities for K12. K12. November 18, 2015.

Long-Term and Actionable Prediction of Student Outcomes Using Automated Detectors of Engagement and Affect. City University of New York, Graduate Center. November 5, 2015.

Research in the MOOC Big Data in Education. Plenary address at the Third Meeting of Computational Behavioral Sciences. Wuhan, China. October 12, 2015.

The Emergence of Big Data in Education. School of Psychology, Central China Normal University. October 11, 2015.

Towards Long-Term and Actionable Prediction of Student Outcomes using Automated Detectors of Engagement and Affect. Department of Educational Psychology (Quantitative Methodology), University of Georgia. September 18, 2015.

Detecting Engagement Automatically with a Combination of Data Mining and Knowledge Engineering. CRESST Conference 2015. August 20, 2015.

Educational Data Mining: Opportunities and Potential. University of Oklahoma. August 6, 2015.

Predicting Learner Outcomes with Learning Analytics. Blackboard DevCon 2015. July 20, 2015.

Predictive Analytics for Education. Presentation to the Educational Data Mining/Learning Analytics Meetup, New York, NY. July 14, 2015.

Intelligent Tutoring Systems and MOOCs. Keynote presentation at the 2nd Symposium of Learning Science and Online Education (with Xiangen Hu). July 9, 2015.

Educational Data Mining: Potentials for MOOCs and Blended Learning in Higher Education. Plenary Address at the 12th Annual Online Learning Consortium Blended Learning Conference and Workshop 2015. July 8, 2015.

Personal Knowledge/Learning Graph. Keynote presentation at the 8th International Conference on Educational Data Mining (with George Siemens and Dragan Gasevic). June 26, 2015.

Learning Analytics: What the Research Says. London Knowledge Lab. May 28, 2015.

Educational Data Mining: Potential for Online Training. National Center for Disaster Preparedness. April 23, 2015.

Predictive Analytics for Education. Presentation to the Educational Data Mining/Learning Analytics Meetup, Boston MA. April 8, 2015.

Engagement in Reasoning Mind Classrooms. Keynote presentation at GENIECON. February 28, 2015.

Towards Long-Term and Actionable Prediction of Student Outcomes using Automated Detectors of Engagement and Affect. Institute for Quantitative Theory and Methods, Emory University. February 9, 2015.

Towards Measuring Engagement and Affect in Online Learning. EdX. February 5, 2015.

Towards Long-Term and Actionable Prediction of Student Outcomes using Automated Detectors of Engagement and Affect. Frontier Lecture Series. Department of Teaching, Learning, and Culture. Texas A&M University. December 4, 2014.

Educational Data Mining: A Revolution in Methods for Understanding Learners and Learning. Faculty of Mathematics, Moscow State Pedagogical University. November 21, 2014.

Educational Data Mining: A New Generation of Methods for Understanding Learners and Learning. Faculty of Business Informatics, National Research University: Higher School of Economics. November 18, 2014.

Educational Data Mining: Potential for Medical Education. New York University School of Medicine. November 12, 2014.

Long-Term Predictions of Student Outcomes From Engagement in Online Learning. Institute of Education, Tsinghua University. October 23, 2014.

Studying Moment-by-Moment Learning. School of Psychology. Central China Normal University. October 21, 2014.

Towards Detecting Student Inquiry Skill in Microworlds and Virtual Environments. School of Psychology. Central China Normal University. October 20, 2014.

Big Data Mining in the Field of Education. Conference on Computational Behavioral Sciences & The 2nd Symposium on Internet Research and Social Alarm. October 18, 2014.

Student Engagement in Digital Learning. Public webinar in coordination with Reasoning Mind. October 7, 2014.

Analitica de Aprendizaje. 11o Congreso Internacional y 8o Nacional de Informatica y Sistemas. October 3, 2014.

Towards Better and More General Prediction Models of Engagement. LINK Lab, University of Texas, Arlington. September 29, 2014.

Big Data in Education Research. Institute of Education Sciences Principal Investigator Meeting. September 3, 2014.

Educational Data Mining: A Revolution in Methods for Understanding Learners and Learning. Department of Computer Science and Automation. Indian Institute of Science. July 18, 2014.

Advancing the Science of Learning with Educational Data Mining. Public lecture. Coimbatore, India. July 16, 2014.

Predicting Longer-Term Outcomes From Automated Measures of Engagement and Affect. NorthEast Regional Computing Program Workshop on Analytics in Higher Education. June 16, 2014.

Towards Long-Term and Actionable Prediction of Student Outcomes using Automated Detectors of Engagement and Affect. School of Education and Social Policy. Northwestern University. May 1, 2014.

Measuring Learner Engagement with Data Mining. National Conference on Measurement in Education. April 4, 2014.

Studying the Antecedents of Eureka Moments During Learning. Institute for Intelligent Systems. University of Memphis. March 18, 2014.

Towards Long-Term and Actionable Prediction of Student Outcomes using Automated Detectors of Affect and Engagement. Graduate School of Education. Harvard University. March 11, 2014.

Advancing the Science of Learning with Educational Data Mining. Indian Institute of Technology Madras Research Park. February 14, 2014.

Learning Analytics: Potential and Principles. Association for Educational Communications and Technology (AECT) RTD Webinar Series. February 6, 2014.

Towards Long-Term and Actionable Prediction of Student Outcomes using Automated Detectors of Engagement and Learning. Learning Sciences Institute, Arizona State University. November 22, 2013.

Using Educational Data Mining to Study Problem Behaviors in Online Learning. Association for Behavior Analysis International (ABAI), Second Education Conference. Chicago, IL. November 9, 2013.

Adaptive Learning. Cambridge University Press. October 8, 2013.

Educational Data Mining. Pearson, Inc. August 21, 2013.

Predicting Preparation for Future Learning Better Using Quantitative Analysis of Moment-by-Moment Learning. ETS. July 24, 2013.

EDM in a Complex and Changing World. Keynote Address. 6th International Conference on Educational Data Mining. Memphis, Tennessee. July 9, 2013.

Envisioning the Future of Cyberlearning. Keynote address. Cyberlearning: Synthesis and Envisioning 2013. Arlington, Virginia. June 26, 2013.

Affect, Collaboration, and Off-Task Behavior in the Chemistry Virtual Lab. Minerva University. April 30, 2013.

Educational Data Mining: Towards Long-Term and Actionable Prediction of Student Outcomes. College of Education and Human Development. University of Wisconsin. April 19, 2013.

Towards Detecting Student Inquiry Skills in Microworlds and Virtual Environments. Educational Measurement and Applied Cognitive Sciences Research Unit. University of Luxembourg. April 9, 2013.

Modeling Student Learning, Moment-by-Moment. Center for Research and Evaluation of Advanced Technologies in Education. New York University. March 1, 2013.

Educational Data Mining: Predict the Future, Change the Future. Data Mining Possibilities Seminar Series. City University of New York Graduate Center. February 15, 2013.

Modeling Student Learning, Moment by Moment. Reasoning Mind. February 7, 2013.

Towards Detecting Student Inquiry Skills in Science Microworlds. New York Hall of Science, December 21, 2012.

Educational Data Mining: A Revolution in Methods for Understanding Learners and Learning. Electrical Engineering and Computer Science Department. University of Toledo. December 3, 2012.

Educational Data Mining: Predict the Future, Change the Future. Julius and Rosa Sachs Distinguished Lecture. Teachers College, Columbia University. November 5, 2012.

Studying Student Disengagement with Educational Data Mining. Institute of Cognitive Science, University of Colorado, Boulder. October 26, 2012.

Modeling Student Learning, Moment-by-Moment. Department of Computer Science, University of Colorado, Boulder. October 25, 2012.

Using Educational Data Mining to Detect Disengagement. Reasoning Mind. October 23, 2012.

Towards Automatically Detecting the Robustness of Student Learning. Computer Science and Artificial Intelligence Laboratory, Massachusetts Institute of Technology. August 31, 2012.

Modeling the Learning in 4-D. Keynote Address. 20th International Conference on User Modeling, Adaptation, and Personalization. July 18, 2012.

Educational Data Mining Methods for Modeling and Studying Gaming the System in Educational Software. ETS. April 24, 2012.

Studying Student Disengagement and the Robustness of Learning with Educational Data Mining. BBN Technologies, Cambridge, Massachusetts. February 3, 2012.

Towards Automatically Detecting the Robustness of Student Learning. AAALab/LIFE Center, School of Education, Stanford University, September 30, 2011.

Towards Automatically Detecting the Robustness of Student Learning. Pittsburgh Science of Learning Center Colloquium, Carnegie Mellon University, May 23, 2011.

Towards Automatically Detecting the Robustness of Student Learning. Invited Talk, Intelligent Tutoring Systems Track. 24th Florida Artificial Intelligence Research Society Conference. Palm Beach, Florida. May 19, 2011.

Using Educational Data Mining to Detect Disengagement and the Moment of Student Learning. Teachers College, Columbia University. March 23, 2011

Using Educational Data Mining to Detect the Moment of Student Learning. 11th Philippine Computing Science Congress (PCSC2011). Naga, Bicol, Philippines. March 4, 2011.

Using Educational Data Mining to Detect the Moment of Student Learning. Department of Computer Science, University of the Philippines Diliman. February 28, 2011.

Educational Data Mining: A Revolution in Methods for Understanding Learners and Learning. University of Veracruz, Mexico (by videoconference). May 28, 2010.

Intelligent Tutoring Goes to School in the Big City… and the Suburbs… and the Countryside… and right here in Metro Manila! College of Computer Studies, De La Salle University – Manila, Philippines. April 8, 2010.

Intelligent Tutoring Goes to School in the Big City… and the Suburbs… and the Countryside… and the Developing World Mega-City. Department of Computer Science, University of Massachusetts Amherst. February 25, 2010.

Educational Data Mining: A Revolution in Methods for Understanding Learners and Learning. Science Colloquium Series, Colgate University. November 20, 2009.

Interface design, affect, and students' choice to "game the system". BostonCHI: The New England area chapter of ACM SIGCHI. September 8, 2009.

Towards Understanding Why Students "Game the System" Within Educational Software. Institute for Intelligent Systems, University of Memphis. March 12, 2009.

Towards Understanding Why Students Game the System. Department of Educational and Counseling Psychology, McGill University. June 18, 2008.

Using Data Mining to Better Understand Learning and Learners: Key Challenges and Directions. Department of Computer Science, University of Sherbooke. June 17, 2008.

Detecting and Responding to Gaming the System in Cognitive Tutors. Carnegie Learning, Inc. April 3, 2008.

Towards Educational Software that Detects and Responds to All the Ways Students Choose to Use It. Department of Computer Science, Worcester Polytechnic Institute. September 14, 2007.

Detecting and Understanding Gaming the System and Off-Task Behavior in Intelligent Tutoring Systems. London Knowledge Lab, University of London. April 26, 2007.

Developing Systems that Detect and Adapt to When Students Game the System. Human-Centered Technology Group, School of Informatics, University of Sussex. November 2, 2006.

Developing Systems that Detect and Adapt to When Students Game the System. School of Informatics, University of Edinburgh. October 27, 2006.

Scooter: an Agent Who Adapts to When Students Game the System. Mixed Reality Laboratory, School of Computer Science, University of Nottingham. October 20, 2006.

Gaming the System: How it Affects Learning and Why Students Do It. Pädagogische Psychologie Group, Department of Psychology, University of Muenster. July 14, 2005.

Remediating Resilient Overgeneralization in Data Representation. Pittsburgh Supergroup for Scientific Reasoning, University of Pittsburgh. October 10, 2003.

A model of resilient overgeneralization: When you know bar graphs, all data looks categorical. UIC Cognitive Brown Bag Lecture, University of Illinois at Chicago. November 20, 2001.

ADVISING

Doctoral Advisor. Xiner "Rachel" Liu. Ph.D. student in Teaching, Learning, and Leadership at the University of Pennsylvania. (in process)

Doctoral Advisor. Zhanlan Wei. Ph.D. student in Teaching, Learning, and Leadership at the University of Pennsylvania. (in process)

Doctoral Advisor. Shruti Mehta. Ph.D. student in Teaching, Learning, and Leadership at the University of Pennsylvania. (in process)

Doctoral Advisor. Andres Zambrano. Ph.D. student in Teaching, Learning, and Leadership at the University of Pennsylvania. (in process)

Doctoral Advisor. Nidhi Nasiar. Ph.D. student in Learning Sciences and Technologies at the University of Pennsylvania. (in process)

Doctoral Advisor. Joyce Zhang. Ph.D. student in Learning Sciences and Technologies at the University of Pennsylvania. (in process)

Doctoral Advisor. Jeffrey Bender (co-advisor: Gail Kaiser). Doctoral student in Computer Science at Columbia University. (in process)

Doctoral Advisor. Matthew Donovan. Ed.D. student in PennCLO at University of Pennsylvania. (in process)

Honorary Doctoral Thesis Co-Chair. Erverson Bruno Gomes de Sousa (Primary Chair: Rafael Ferreira Mello). Computer Science Department, Universidade Federal Rural de Pernambuco, Recife, Brazil. (in process)

Doctoral Advisor. Stefan Slater. Ph.D. student in Teaching, Learning, and Leadership at the University of Pennsylvania (Graduated 2025)

Doctoral Advisor. Luis Barros. Ed.D. student in PennCLO, University of Pennsylvania. (Graduated 2023)

Doctoral Advisor. Alexandra Andres. Ed.D. student in Teaching, Learning, and Leadership at the University of Pennsylvania. (Graduated 2023)

Doctoral Advisor. Navin Valrani. Ed.D. student in PennCLO, University of Pennsylvania. (Graduated 2023)

Doctoral Advisor. Bruce Acacio. Ed.D. student in PennCLO at University of Pennsylvania. (Graduated 2022)

Doctoral Advisor. Shamya Karumbaiah. Ph.D. student in Teaching, Learning, and Leadership at the University of Pennsylvania. (Graduated 2021)

Doctoral Advisor. Miguel Andres-Bray. Ph.D. student in Teaching, Learning, and Leadership at the University of Pennsylvania. Graduated 2021. Senior Data Scientist at McGraw-Hill Education as of 2021.

Doctoral Advisor. Richard Scruggs. Ph.D. student in Higher Education at University of Pennsylvania. Graduated 2021. Postdoc at Karolinska Institute as of 2021.

Doctoral Advisor. Chad Coleman. Ph.D. student in Cognitive Studies in Education, Teachers College Columbia University. Graduated 2021. Director of Data Science at Stanley Black & Decker as of 2021.

Doctoral Advisor. Anne Trumbore. Ed.D. student in PennCLO at University of Pennsylvania. Graduated 2020. Executive Director at the University of Virginia as of 2021.

Doctoral Advisor. Nora Manz. Ed.D. student in PennCLO at University of Pennsylvania. Graduated 2020.

Doctoral Advisor. Shimin Kai. Ph.D. student in Cognitive Studies in Education at Teachers College Columbia University. Graduated 2019.

Doctoral Advisor. Michael Aaron Hawn. Ph.D. student in Cognitive Studies in Education at Teachers College Columbia University. Graduated 2018. Director of Research and Evaluation at Student Leadership Network as of 2021.

Doctoral Advisor. Victoria "Mia" Almeda. Ph.D. student in Cognitive Studies in Education at Teachers College Columbia University. Graduated 2018. Research Scientist at TERC as of 2021.

Doctoral Advisor. Yang Jiang (co-advisor: John Black). Ph.D. student in Cognitive Studies in Education at Teachers College Columbia University. Graduated 2018. Research Scientist at ETS as of 2021.

Doctoral Advisor. Vasiliki Georgoulas. Ph.D. student in Cognitive Studies in Education at Teachers College Columbia University. Graduated 2018.

Doctoral Advisor. Elle Wang (co-advisor: John Black). Ph.D. student in Cognitive Studies in Education at Teachers College Columbia University. Graduated 2017. Research Scientist at Arizona State University as of 2021.

Doctoral Advisor. Jeanine DeFalco. Ph.D. student in Cognitive Studies in Education at Teachers College Columbia University. Graduated 2016. Research Scientist at Army Research Laboratory as of 2021.

Doctoral Advisor. Maria "Sweet" San Pedro. Ph.D. student in Cognitive Studies in Education at Teachers College Columbia University. Graduated 2016. Senior Research Scientist at ACT as of 2021.

Doctoral Co-Advisor. Max Norris. Ph.D. student in Natural Language Processing at the University of Edinburgh. Primary advisor Kobi Gal. (in process)

Honorary Doctoral Thesis Co-Chair. David Nadler Prata (Primary Chair: Evandro Barros Costa). Computer Science Department, Universidade Federal de Campina Grande, Campina Grande, Brazil. Graduated 2008.

Post-Doctoral Mentor. Kirk Vanacore. Post-doctoral research associate in Learning Sciences and Technologies at University of Pennsylvania (2024-2025).

Post-Doctoral Mentor. Amanda Barany. Post-doctoral research associate in Learning Sciences and Technologies at University of Pennsylvania (2023-present).

Post-Doctoral Mentor. Namrata Srivastava. Post-doctoral research associate in Learning Sciences and Technologies at University of Pennsylvania (2023-2024). Research Scientist at Vanderbilt University as of 2024.

Post-Doctoral Mentor. Valdemar Svabensky. Post-doctoral research associate in Learning Sciences and Technologies at University of Pennsylvania (2022-2023). Post-doc at Kyushu University as of 2024.

Post-Doctoral Mentor. Elizabeth Cloude. Post-doctoral research associate in Learning Sciences and Technologies at University of Pennsylvania (2022-2023). Marie Currie Fellow at Tampere University as of 2024.

Post-Doctoral Mentor. Stephen Hutt. Post-doctoral research associate in Learning Sciences and Technologies at University of Pennsylvania (2020-2022). Assistant Professor at University of Denver as of 2024.

Post-Doctoral Mentor. Luc Paquette. Post-doctoral research associate in Human Development at Teachers College Columbia University (2013-2015). Associate Professor at University of Illinois, Urbana-Champaign as of 2024.

Post-Doctoral Mentor. Jaclyn Ocumpaugh. Post-doctoral fellow in Learning Sciences at Worcester Polytechnic Institute (2012-2013). Post-doctoral research associate in Human Development at Teachers College Columbia University (2013-2016). Senior Research Investigator at Penn Center for Learning Analytics, University of Pennsylvania (2016-present).

Post-Doctoral Mentor. Arnon Hershkovitz. Post-doctoral fellow in Learning Science at Worcester Polytechnic Institute (2011-2012; co-advisor: Janice Gobert). Post-doctoral research associate in Human Development at Teachers College Columbia University (2012-2013). Senior Lecturer at Tel Aviv University as of 2021.

Masters Advisor. Alexandra Andres. M.S. student in Learning Sciences and Technologies. Graduated 2018.

Masters Advisor. Stefan Slater. M.S. student in Learning Analytics. Graduated 2017.

Masters Advisor. Jing Zhang. M.A. student in Cognitive Studies in Education at Teachers College Columbia University. Graduated 2016.

Masters Advisor. Yunjia Yao. M.S. student in Learning Analytics at Teachers College Columbia University. Graduated 2016.

Masters Advisor. Connie Liu. M.S. student in Learning Analytics at Teachers College Columbia University. Graduated 2016.

Masters Advisor. Supreeth Gowda. (co-advisor: Neil Heffernan). M.S. student in Learning Sciences and Technologies at Worcester Polytechnic Institute. Graduated 2014.

Masters Advisor. William Hawkins. (co-advisor: Neil Heffernan). M.S. student in Computer Science at Worcester Polytechnic Institute. Graduated 2014.

Masters Advisor. Michael Wixon. (co-advisor: Janice Gobert). M.S. student in Learning Science at Worcester Polytechnic Institute. Graduated 2013.

Masters Advisor. Adam Goldstein. (co-advisor: Neil Heffernan). M.S. student in Computer Science at Worcester Polytechnic Institute. Graduated 2011.

Masters Research Supervisor. Shiyue Zheng. M.S. student in Learning Analytics. Graduated 2017.

Masters Research Supervisor. Yijun Ma. M.S. student in Communication, Computing, & Technology in Education at Teachers College Columbia University. Graduated 2016.

Masters Research Supervisor. Victoria "Mia" Almeda. M.S. student in Neuroscience and Education. (2012- 2013)

Doctoral Thesis Committee Member. Christine Nasserghodsi (thesis advisor: Felice Tilin). Ed.D. student in PENNCLO, University of Pennsylvania. (in process)

Doctoral Thesis Committee Member. Jonathon Sun. (thesis advisor: Amalia Dache). Ph.D. student in Higher Education, University of Pennsylvania. Graduated 2025.

Doctoral Thesis Committee Member. Amy Adair (thesis advisor: Janice Gobert). Ph.D. student in Learning Sciences, Rutgers University. Graduated 2024.

Doctoral Thesis Committee Member. Daneih Ismail (thesis advisor: Peter Hastings). Ph.D. student in Computer Science, DePaul University. Graduated 2023.

Doctoral Thesis Committee Member. Felipe de Morais (thesis advisor: Patricia Jaques Maillard). Ph.D. student in Applied Computing, Unisinos. Graduated 2022.

Doctoral Thesis Committee Member. Jonathan McMillan. (thesis advisor: Laura Kohn-Wood). Ph.D. student in Higher Education Leadership, University of Miami. Graduated 2022.

Doctoral Thesis Committee Member. Fatemeh Salehian Kia (thesis advisors: Marek Hatala and Lyn Bartram). Ph.D. student in School of Interactive Art and Technology, Simon Fraser University. Graduated 2021.

Doctoral Thesis Committee Member. Sungjin Nam (thesis advisor: Kevyn Collins-Thompson). Ph.D. student in School of Information, University of Michigan. Graduated 2020.

Doctoral Thesis Committee Member. Donald Huesman (thesis advisor: Laura Perna). Ed.D. student in Higher Education, University of Pennsylvania. Graduated 2019.

Doctoral Thesis Committee Member. Zhitong Yang (thesis advisor: Susan Yoon). Ph.D. student in Teaching, Learning, and Teacher Education, University of Pennsylvania. Graduated 2019.

Doctoral Thesis Committee Member. Anthony Botelho (thesis advisor: Neil Heffernan). Ph.D. student in Learning Sciences and Technologies at Worcester Polytechnic Institute. Graduated 2019.

Doctoral Thesis Committee Member. Kim Kelly (thesis advisor: Neil Heffernan). Ph.D. student in Learning Sciences and Technologies at Worcester Polytechnic Institute. Graduated 2018.

Doctoral Thesis Committee Member. Toi Sin Arvidsson (thesis advisor: Deanna Kuhn). Ph.D. student in Cognitive Studies at Teachers College Columbia University. Graduated 2018.

Doctoral Thesis Committee Member. Korinn Ostrow (thesis advisor: Neil Heffernan). Ph.D. student in Learning Sciences and Technologies, Worcester Polytechnic Institute. Graduated 2018.

Doctoral Thesis Committee Member. Seth Adjei (thesis advisor: Neil Heffernan). Ph.D. student in Computer Science at Worcester Polytechnic Institute. Graduated 2018.

Doctoral Thesis Committee Member. Alison Lee (thesis advisor: John Black). Ph.D. student in Cognitive Studies at Teachers College Columbia University. Graduated 2018.

Doctoral Thesis Committee Member. Douglas DiStefano (thesis advisor: Molly Ness). Ph.D. student at Fordham University. Graduated 2018.

Doctoral Thesis Committee Member. David Nitkin (thesis advisor: Douglas Ready). Ph.D. student in Educational Leadership at Teachers College Columbia University. Graduated 2018.

Doctoral Thesis Committee Member. Tiantian Jin (thesis advisor: John Black). Ph.D. student in Cognitive Studies at Teachers College Columbia University. Graduated 2018.

Doctoral Thesis Committee Member. Raha Moussavi (thesis advisor: Janice Gobert). Ph.D. student in Learning Sciences and Technologies at Worcester Polytechnic Institute. Graduated 2018.

Doctoral Thesis Committee Member. Naomi Wixon (thesis advisor: Ivon Arroyo). Ph.D. student in Learning Sciences and Technologies at Worcester Polytechnic Institute. Graduated 2018.

Doctoral Thesis Committee Member. Michelle Banawan (thesis chair: Mercedes Rodrigo) Ph.D. student in Computer Science at Ateneo de Manila University. Graduated 2017.

Doctoral Thesis Committee Member. Ama Awotwi (thesis advisor: Herb Ginsburg). Ph.D. student in Cognitive Studies at Teachers College Columbia University. Graduated 2017.

Doctoral Thesis Committee Member. Joanne Duncan-Carnesciali (thesis advisor: Robert Fullilove). Ph.D. student in Health Education at Teachers College Columbia University. Graduated 2016.

Doctoral Thesis Committee Member. Michael Swart (thesis advisor: John Black). Ph.D. student in Cognitive Studies at Teachers College Columbia University. Graduated 2016.

Doctoral Thesis Committee Member. Kelly Feeney (thesis advisor: O. Roger Anderson). Ph.D. student in Science Education at Teachers College Columbia University. Graduated 2016.

Doctoral Thesis Committee Member. Nicole DiCrecchio (thesis advisor: James Corter). Ph.D. student in Measurement and Evaluation at Teachers College Columbia University. Graduated 2016.

Doctoral Thesis Committee Member. Diego Luna-Bazaluda (thesis advisor: Larry DeCarlo). Ph.D. student in Measurement, Evaluation, and Statistics, at Teachers College Columbia University. Graduated 2015.

Doctoral Thesis Committee Member. Yung-Yi Juliet Chao (thesis advisor: Barbara Tversky). Ph.D. student in Cognitive Studies at Teachers College Columbia University. Graduated 2015.

Doctoral Thesis Committee Member. Jung Yeon Park (thesis advisor: Matthew Johnson). Ph.D. student in Measurement, Evaluation, and Statistics, at Teachers College Columbia University. Graduated 2015.

Doctoral Thesis Committee Member. YuTao Wang (thesis advisor: Neil Heffernan). Ph.D. student in Computer Science at Worcester Polytechnic Institute. Graduated 2015.

Doctoral Thesis Committee Member. Karrie Godwin (thesis advisor: Anna Fisher). Ph.D. student in Psychology at Carnegie Mellon University. Graduated 2015.

Doctoral Thesis Committee Member. Ani Aghababyan (thesis advisor: Taylor Martin). Ph.D. student in Instructional Systems and Learning Sciences at Utah State University. Graduated 2014.

Doctoral Thesis Reader. Charles Lang (thesis advisor: Howard Gardener). Ph.D. student in Human Development and Education at Harvard University. Graduated 2014.

Doctoral Thesis Committee Member. Samantha Creighan (thesis advisor: Herbert Ginsburg). Ph.D. student in Cognitive Studies in Education at Teachers College Columbia University. Graduated 2014.

Doctoral Thesis Committee Member. Elizabeth Owen (thesis advisor: Constance Steinkuehler). Ph.D. student in Games, Learning, and Society at University of Wisconsin, Madison. Graduated 2014.

Doctoral Thesis Committee Member. Michael Sao Pedro (thesis advisor: Janice Gobert). Ph.D. student in Learning Sciences and Technologies at Worcester Polytechnic Institute. Graduated 2013.

Doctoral Thesis Committee Chair (Honorary). Dan Hoffman (thesis advisor: Chuck Kinzer). Ph.D. student in Communication, Computing, & Technology in Education. at Teachers College Columbia University. Graduated 2013.

Doctoral Thesis Committee Member. Kara Carpenter (thesis advisor: Herbert Ginsburg). Ph.D. student in Cognitive Studies in Education at Teachers College Columbia University. Graduated 2013.

Doctoral Thesis Committee Member. Zachary Pardos (thesis advisor: Neil Heffernan). Ph.D. student in Computer Science at Worcester Polytechnic Institute. Graduated 2012. Assistant Professor at the University of California, Berkeley as of 2013.

Doctoral Thesis Committee Member. Wendy Moore (thesis advisor: Deanna Kuhn). Ph.D. student in Cognitive Studies in Education at Teachers College Columbia University. Graduated 2012.

Masters Thesis Committee Member. Marcelo Almeida Santana (thesis chair: Evandros Barros Costa) M.S. student in Computer Science at the Universidade Federal de Alagoas. Graduated 2015.

Masters Thesis Committee Member. Juan Miguel Limjap Andres (thesis chair: Mercedes Rodrigo) M.S. student in Computer Science at Ateneo de Manila University. Graduated 2014.

Masters Thesis Committee Member. Jose Carlos Soriano (thesis chair: Mercedes Rodrigo) M.S. student in Computer Science at Ateneo de Manila University. Graduated 2012.

Masters Thesis Committee Member. Diane Lee (thesis chair: Mercedes Rodrigo) M.S. student in Computer Science at Ateneo de Manila University. Graduated 2011.

Masters Thesis Committee Member. Maria O.C.Z. San Pedro (thesis chair: Mercedes Rodrigo) M.S. student in Computer Science at Ateneo de Manila University. Graduated 2010.

Masters Thesis Committee Member. Karina Hizon (thesis chair: Mercedes Rodrigo) M.S. student in Computer Science at Ateneo de Manila University. Graduated 2009.

International Doctoral Dissertation Reviewer. Sergio Salmeron. (thesis chairs: Olga Santos and Jesus Boticario). Ph.D. student in Artificial Intelligence at Universidad Nacional de Educación a Distancia (UNED). Graduated 2018.

Undergraduate Major Qualifying Project (WPI). Kristin Hughes (2010)

Undergraduate Interactive Qualifying Project (WPI). Zhongxiu Liu & Visit Patara (2012-2013), Alan Alezker (2012-2013), Anthony Rojas & Daniel Roberge (2011), Gregory Moore (2011), Breanna McElroy & Mohammad Alshuqaiq (2011), Ryan Genato & Samantha Fontaine & Ricardo Belmontez (2011), Ethan Wolfe & James Salvati (2010-2011), Sean Burke & Michael Ducey & Sindi Silaj (2010)

Independent Study Projects (WPI). Michael Tidd (2011), Adam Nakama (2010), Dovan Rai (2010)

Masters Research Internships (UPenn 2018-2024): Yan Tao, Alexander White, Zuchuan Liao, Jialian Li, Nidhi Nasiar, Wanjing "Anya" Ma, Yiqiu Zhou, Weiyi Gong, Yishan Zou, Xiaodan Yu, Seiyon Lee, Haripriya Valayaputtar, Xiner "Rachel" Liu, Zhongtian Huang, Zeyneb Sarioglan, Qimu "Martin" Liang, Margaret Guan, Erin Chi, Haoxuan Cui

Undergraduate Research Assistantships, Summer Internships, Summer Research Fellowships (UPenn, 2016-2024): Aayushi Dangol, Ana Lamberto, Benjamin Blanco, Alex Tang, Clayton Hickey

Undergraduate Senior Design Mentor (UPenn, 2016-2025): Derin Gunzel, Rodolfo Manuel Villarica, Saurabh Vasil, Dylan Levine, Paras Nahar, Joe Schwabacher, Lorenzo Lucina Maguire, Joshua Valluru, Sean Cho, James Baker, Cindy Wei, Vivi Li, Chanya Thanglerdsumpan, Avinash Upadhyayula

Undergraduate Research Assistantships, Summer Internships, Summer Research Fellowships (WPI, 2009-2013): Kevin Ramirez, Gregory Moore, Ravi Raval, Milan Desai, Robert Le, Meng Sun, Andrew Tremblay

Undergraduate Research Assistantships, Summer Internships, Summer Research Fellowships (CMU, 2006-2008): Owen Durni, Matthew Morrill, Brian Thompson

External Examiner. Amrita Vishwa Vidyapeetham (Ph.D. student in Engineering at Amrita University), 2025. Vinitra Swamy (Ph.D. student in Computer Science at EPFL), 2025. Stephanie Buono (Ph.D. student in Applied Psychology and Human Development at the Ontario Institute for Studies in Education, University of Toronto), 2021. Tapani Toivonen (Ph.D. student in Computer Science at University of Eastern Finland), 2020. Ng Hongrui Kelvin (Ph.D. student in Electrical and Electronic Engineering, Nanyang Technological University), 2020. Jan Papousek (Ph.D. student in Computer Science at Masaryk University), 2018. Ilkka Jormanainen (Ph.D. student in Computer Science at University of Eastern Finland), 2013. Luc Paquette (Ph.D. student in Computer Science at Sherbrooke University), 2013. Elys Vasquez-Iscan (Ph.D. student at Teachers College), 2013. Benjapol Benjapalakorn (Ph.D. student at Teachers College), 2013. Lichao Li (M.S. student in Information Technologies at University of Sydney). 2007.

OTHER TEACHING EXPERIENCE

Tutorial. Ocumpaugh, J., Paquette, L., Barany, A., Baker, R.S. (2025) Conducting in-the-moment data-driven classroom interviews (DDCI) during digital learning using Quick Red Fox (QRF). International Conference on Artificial Intelligence and Education. July 22, 2025.

Co-Director (2024-2025) LASER Institute.

Co-Director (2024-2025) Data Science Methods for Digital Learning Platforms IES Certificate.

Faculty Facilitator. Baker, R.S. (2023-2024). Introduction to Teaching with Artificial Intelligence, Penn Professional Learning,

Tutorial. Baker, R.S. (2021) Educational Data Mining. FREMO, Center for Educational Measurement, University of Oslo. August 23, 2021.

Tutorial. Baker, R.S. (2018) Feature Engineering. Bi-Annual Meeting of the Big Data for Education Spoke of the Northeast Big Data Hub. October 18, 2018.

Tutorial. Baker, R.S. (2018) Feature Engineering. Learning Analytics Summer Institute. June 11, 2018.

Tutorial. Baker, R.S. (2018) Feature Engineering. Teaching Systems Laboratory, Massachusetts Institute of Technology. May 18, 2018.

Tutorial. Baker, R.S., Nurnberger, A. (2018) Educational Data Mining Methods. Bi-Annual Meeting of the Big Data for Education Spoke of the Northeast Big Data Hub. February 16, 2018.

Tutorial. Baker, R.S. (2017) Educational Data Mining/Learning Analytics. National Center for Education Statistics. October 3, 2017.

Tutorial. Baker, R.S., Arroyo, I. (2017) Educational Data Mining. Annual Meeting of the Northeast Big Data Hub, Big Data for Education Spoke. August 28, 2017.

Tutorial. Baker, R.S. (2017) Data Mining and Big Data. French-American Chamber of Commerce. May 13, 2017.

Webinar. Siemens, G., Baker, R.S.J.d. (2013) State of the Field: Learning Analytics and Educational Data Mining. EDUCAUSE Learning Initiative. August 5, 2013.

Workshop. DiCerbo, K., Baker, R.S.J.d. (2013) Serious Gaming Analytics. Workshop presentation at the 2013 Learning Analytics Summer Institute. Stanford, California.

Tutorial. Costa, E.G., Baker, R.S.J.d., Amorim, L., Magalhaes, J., Marinho, T. (2012) Mineração de Dados Educacionais: Conceitos, Técnicas, Ferramentas e Aplicações. Jornada de Atualização de Informática em Educação 2012. Rio de Janeiro, Brazil.

Instructor. Pittsburgh Science of Learning Center Summer School. Summer 2012.

Tutorial. Nixon, T., Baker, R.S.J.d., Yudelson, M. & Pardos, Z. (2012). Parameter fitting for learner models. Workshop at the International Conference on Intelligent Tutoring Systems. Corfu, Greece.

Tutorial. Graesser, A., Baker, R.S.J.d., Beck, J.E. (2011) A Workshop on Adaptive Learning Systems: A Pre-Conference Workshop of the Philippine Computing Science Congress 2011. Naga, Bicol, Philippines.

Tutorial. Baker, R.S.J.d., Rodrigo, M.M.T. (2010) Toward the adaptive classroom: Emerging educational data mining methods for scientific discovery in education. Workshop in Philippines for Engineering Research and Development for Technology Consortium. Held at Ateneo de Manila University.

Instructor. Pittsburgh Science of Learning Center Summer School. Head, Educational Data Mining track. Summer 2010.

Tutorial. Baker, R.S.J.d., Yacef, K., Beck, J.E., Koedinger, K.R. (2009) Educational Data Mining. Tutorial at Artificial Intelligence in Education 2009.

Instructor. Pittsburgh Science of Learning Center Summer School. Co-head, Educational Data Mining track (with Kenneth R. Koedinger). Summer 2009.

Instructor. Pittsburgh Science of Learning Center Summer School. Co-head, Data Mining with DataShop track (with Kenneth R. Koedinger). Summer 2008.

Teaching Assistant. Cognitive Modeling and Intelligent Tutoring Systems, Professor Kenneth R. Koedinger. Human-Computer Interaction Institute, Carnegie Mellon University. Spring 2001.

Teaching Assistant. Advanced Algorithms, Professor Franco Preparata. Department of Computer Science, Brown University. Fall 1999.

Head Teaching Assistant. Data Structures and Algorithms, Professor Roberto Tamassia. Department of Computer Science, Brown University. Spring 1999.

Teaching Assistant. Data Structures and Algorithms, Professor Roberto Tamassia. Department of Computer Science, Brown University. Spring 1998.

Teaching Assistant. Intensive Algebra II Course. Intensive Mathematics Institute, Denton, TX. Summer 1996.

ADVISORY BOARDS

Center for Learning Analytics at Monash. 2023-present.

Bias, Fairness, and Equity Advisory Board. Macmillan. 2023-present.

Global Connections for Women (GC4W). 2021-present.

Digital Vocational Education and Training Hub. Swiss Federal Institute of Technology – Lausanne. 2021-present.

Arizona State University EdPlus Action Lab. 2019-2022.

The EdTech Genome Project. 2019-2021.

Academic Development Institute. 2018-2019.

Alef Education. 2017-present.

McGraw-Hill Education Learning Sciences Research Council Advisory Board/ Learning Science Research Advisory Board. 2017-2021.

Army Research Laboratory. UM-ARL Advisory Board. 2018, 2016.

Central China Normal University. Academic Advisory Committee, School of Psychology and Key-lab and center. 2015.

Classba. Advisory Board. 2015-2016.

University of California, Irvine. Investigating Virtual Learning Environments. Advisory Board Member. For M. Warschauer (PI), 2015-2020.

University of Nevada, Las Vegas. Learning Theory and Analytics as Guides to Improve Undergraduate STEM Education, Advisory Board Member. For M. Bernacki (Project Lead). 2015-2018.

Purdue University. Assessing and Improving Online Learning Spaces for At-Risk Engineering Students. Advisory Board Member. For J. DeBoer (Project Lead). 2015-2018.

NAEP Survey Assessment Innovations Laboratory Network. Advisory Board Member, 2014.

GameDesk, Inc. EXP: Learning Lens: An Evidence-Centered Tool for 21st Century Assessment. Advisory Board Member. 2013-2015.

Everest Edusys/QED, Centre for the Science of Learning (CSL). Scientific Learning Advisor. 2013-2014.

Concord Consortium. Collaborative Research: Large-Scale Research on Engineering Design Based on Big Learner Data Logged by a CAD Tool. Advisory Board Member. 2013-2015.

SRI, International. BCC-EHR: Developing Community Capacity to Measure Noncognitive Factors in Digital Learning Environments. Steering Committee Member. 2013-2015.

Teachley. Board of Advisors. 2013-2014.

Massachusetts Institute of Technology. Dynamic Formative Assessment Models Project Advisory Board. 2012-2013.

Army Research Laboratory. ARL-IIS Advisory Board. 2012-2013.

Stanford University. Learning Analytics Project Affinity Group. 2012-2013.

SRI International. Educational Data Mining Technical Working Group, led by Marie Bienkowski, 2011.

University of Colorado, Boulder. NSF Inquiry Hub project, led by Tamara Sumner, William Penuel. 2011-2014.

Carnegie Learning, Inc. Math360/Math Series Advisory Board. 2009-2011.

ACADEMIC SERVICE AT DEPARTMENT AND UNIVERSITY LEVEL

Chair, Committee on Degrees. University of Pennsylvania Graduate School of Education, 2024-present.

Chair, Senate Committee on Faculty and the Administration (SCOA). University of Pennsylvania, 2022-2024.

Doctoral Programs Committee. Learning, Teaching, and Literacies. University of Pennsylvania Graduate School of Education.

PhD Summer Funding Committee. University of Pennsylvania Graduate School of Education. 2020-present.

Promotion/Tenure Committees. University of Pennsylvania Graduate School of Education. 2023-present.

Hiring Search Committees. University of Pennsylvania Graduate School of Education. 2020-present.

Committee on Degrees. University of Pennsylvania Graduate School of Education. 2018-present.

Senate Committee on Faculty and the Administration (SCOA). University of Pennsylvania. 2018-2024.

Subject Matter Expert. University of Pennsylvania. Penn Information Systems & Computing. Data/AI Team. Penn IT Strategic Plan Committee. 2023.

Advisory Board. Penn GSE Center for Innovation/Catalyst. 2017-present.

Faculty Advisory Committee, Center for Excellence in Teaching, Learning, and Innovation, University of Pennsylvania. 2023-present.

Steering Committee. PennCLO Executive Doctoral Program. 2017-2025.

Faculty Advisory Committee, Online Learning Initiative, University of Pennsylvania. 2016-2023.

Doctoral Programs Committee Chair. Teaching, Learning, and Leadership. University of Pennsylvania Graduate School of Education. 2019-2022.

Learning Management System Working Group. Teachers College, Columbia University. 2015.

Vice Provost for Digital Learning Search Committee. Teachers College, Columbia University. 2014-2015.

Faculty Salary Committee. Teachers College, Columbia University. 2014-2015.

Learning Sciences Committee. Teachers College, Columbia University. 2013-2015.

CIO Search Committee. Teachers College, Columbia University. 2013-2014.

Information Security Committee. Teachers College, Columbia University. 2013-2015.

Dean's Grants for Students Committee. Teachers College, Columbia University. 2013-2016.

Institutional Review Board. Teachers College, Columbia University. 2013-2016.

Summer Institutional Review Board. Teachers College, Columbia University. 2014.

Seminar Organizer. Learning Analytics Seminar. Teachers College, Columbia University. 2012-2015.

Learning Outcomes Coordinator. Department of Social Science and Policy Studies, Worcester Polytechnic Institute, 2010-2012.

Graduate Committee. Department of Social Science and Policy Studies, Worcester Polytechnic Institute, 2009-2012.

Faculty Review Committee. Worcester Polytechnic Institute, 2010-2011.

Seminar Co-Organizer. (with Sandra Katz) Pittsburgh Science of Learning Center. Carnegie Mellon University/ University of Pittsburgh. 2008.

Seminar Co-Organizer. Research and Publication Reading Group. Learning Sciences Research Institute. University of Nottingham. 2006-2007.

Seminar Organizer. Human-Computer Interaction Institute PhD lunches. 2002-2004.

ACADEMIC SERVICE TO THE BROADER RESEARCH COMMUNITY

Editor. Founding Editor (with Didith Rodrigo) *Computer-Based Learning in Context.* 2018-2023.

President. Founding President. *International Educational Data Mining Society*. 2011-2015.

Associate Editor. *Journal of Educational Data Mining*. 2008-Present.

Associate Editor. *Computer-Based Learning in Context.* 2024.

Associate Editor. *International Journal of Artificial Intelligence and Education*. 2015-2018.

Spoke Co-Lead. Big Data in Education Spoke of the NSF Northeast Big Data Innovation Hub. 2015-2020.

Network Co-Lead. Learning Analytics Learning Network. 2019-present.

Conference Chair. *Sixth International Conference on Quantitative Ethnography.* Philadelphia, PA. 2024.

Conference Chair. *Third International Conference on Educational Data Mining.* Pittsburgh, PA, USA. June 11-13 2010.

Program Chair, *18th International Conference on Artificial Intelligence in Education,* 2017.

Program Chair (with Dragan Gasevic and Elle Wang). *Second Learning with MOOCs Workshop.* 2015.

Program Chair (with Joseph E. Beck). *First International Conference on Educational Data Mining*, Montreal, Canada, June 20-21, 2008.

Program Chair (with May Talandron and Sebastian Lalle). *International Conference on Computers in Education, C1 -- Artificial Intelligence in Education/Intelligent Tutoring System Sub-Conference.* 2023.

Program Committee Co-Chair. *International Conference on Computers in Education, C1 -- Artificial Intelligence in Education/Intelligent Tutoring System Sub-Conference.* 2022.

Workshop Co-Chair. From Data to Discovery: LLMs for Qualitative Analysis in Education. LAK2025.

Workshop Co-Organizer. Applications of Generative AI to Support Teaching and Learning in Higher Education. AIED2025.

Workshop Co-Organizer. Conducting in-the-moment Data-Driven Classroom Interviews (DDCI) during digital learning using Quick Red Fox (QRF). ISLS2025.

Workshop Co-Organizer. Generative AI and Learning Analytics (GenAI-LA): Evidence of Impacts on Human Learning. LAK2025.

Workshop Co-Organizer. Learning to Teach with (and Learn from!) the LASER Institute Curriculum. LAK2024.

Workshop Co-Chair. Workshop for Undergraduates in Educational Data Mining and Learning Engineering. EDM2021.

Workshop Co-Organizer. Building Capacity Through the Learning Analytics Learning Network. LA2020.

Workshop Co-Chair. Scientific Findings from the ASSISTments Longitudinal Data Challenge. EDM2018.

Workshop Co-Chair. replicate.education: A Workshop on Large Scale Education Replication. EDM2018.

Workshop Co-convener. Sims and Games Learning Analytics and Educational Data Mining Workshop. New York University, 2013.

Workshop Co-Chair. Formative Feedback in Interactive Learning Environments. AIED 2013.

Workshop Co-Chair. Workshop on Data Mining for User Modeling. *11th International Conference on User Modeling*. 2007.

Workshop Co-Chair. Workshop on Educational Data Mining. *8th International Conference on Intelligent Tutoring Systems*. 2006.

Board of Directors. International Educational Data Mining Society. 2012-2024.

Board of Directors. *Academic Development Institute.* 2016-2019.

Executive Committee. *The Learning Ideas Conference.* 2020-present.

Juror. McGraw Prize. 2018, 2020-2025.

Program Board. Adaptive Instructional Systems Conference. 2018-present.

Steering Committee. International Conference on Educational Data Mining (EDM) series/ International Educational Data Mining Society. 2006-2011.

Executive Committee. International Artificial Intelligence in Education Society. 2011-2023.

Steering Committee. Learning Analytics and Knowledge Conference / Society for Learning Analytics Research, 2011-unknown.

Steering Committee. ACM Learning @ Scale, 2014-2017.

Conference Advisory Board. Educational Data Mining. 2023.

Scholarships Co-Chair. Educational Data Mining. 2023-2025.

Panel & Keynotes Chair. Artificial Intelligence and Education. 2025.

Editorial Board. Journal of Learning Analytics. 2024-present.

Editorial Board. Review of Educational Research. 2023-2024.

Editorial Board. Computers & Education: Artificial Intelligence. 2022-present.

Editorial Board. Journal of the Learning Sciences. 2018-present.

Editorial Board. User Modeling and User-Adapted Interaction. 2019-present.

Editorial Board. International Journal of Artificial Intelligence in Education. 2013-2021.

Editorial Board. International Journal of STEM Education. 2014-present.

Editorial Board. Technology, Knowledge, and Learning. 2013-2014.

Editorial Board. Journal of Writing Analytics. 2016-2019.

Editorial Board. Learning Letters. 2023-present.

Institute Lead. Learning Analytics Summer Institute. Stanford, California. 2013.

Special Section Editor. Journal of Educational Data Mining. Special Section on Human-AI Partnership Enhancing Qualitative Data Analysis for Educational Data Mining. With Amanda Barany and Ha Nguyen. 2025.

Special Issue Editor. Journal of Educational Data Mining. Special Issue of Educational Data Mining on Motivation, Meta-cognition, and Self-regulated Learning. With Phil Winne. 2013.

Special Issue Editorial Board. Technology, Mind, and Brain. Special Issue on Understanding Involuntary Thought and Affect through Big Data and AI.

Board of Special Reviewers. User Modeling and User-Adapted Interaction. 2010-2019.

Representative. Representative to the Board of the International Alliance to Advance Learning in the Digital Era. 2017-2020.

BlueSky Track Chair. International Conference on Artificial Intelligence and Education, 2024.

Doctoral Consortium Co-Chair. International Conference on Quantitative Ethnography, 2022.

Advisory Committee. AI-Based Adaptive Education Conference. 2018-2020.

Advisor. Northeast Student Data Corps, Philadelphia Chapter. 2021.

Advisory Board. National Comprehensive Center. 2024.

Scientific Advisor. OECD, for book "OECD DIGITAL EDUCATION OUTLOOK 2021 Pushing the frontiers with AI, blockchain, and robots". 2020-2021.

Program Committee.
International Computing Education Research (2023-2024)
Computer-Supported Collaborative Learning (2023)
Learning Ideas (2023)
Educational Advances in Artificial Intelligence (2022)
Association for the Advancement of Artificial Intelligence – AAAI
    (area chair, 2021)
Quantitative Ethnography (2021, 2020)
IEEE International Conference on Engineering, Technology, and
    Education (2018)
Learning Sciences/ICLS/ISLS (2018, 2022-2025 – senior PC)
Learning with MOOCs Workshop (2016-2019, 2014)
User Modeling, Adaption, and Personalization (2009-2025)
IEEE International Conference on Advanced Learning
    Technologies (2017), AISLE Track (2021-2022)
Affective Computing and Intelligent Interaction (2023, 2019, 2017
    – senior PC, 2024 - PC, 2013 – area chair, 2011)
Learning Analytics (2011-2019, 2025, 2020-2024 senior PC)
aWEAR (2016)
ACM Learning at Scale (2019-2025, 2015, 2014)
FLAIRS (2014-2017)
Educational Data Mining (2009-2016, 2023 -- PC,
    2017-2019, 2021-2022, 2024-2025 – senior PC)
Artificial Intelligence and Education (2021-2025,
    2019, 2018, 2015, 2013, 2011 – senior PC, 2020, 2009- PC)
    (Named one of Best Reviewers in 2013)

ACM Symposium on Applied Computing Track on Intelligent, Interactive, and Innovative Learning Environments (2016, 2014, 2011)

Intelligent Tutoring Systems (2018, 2016 – senior PC, 2014, 2012, 2010 – senior PC, 2008) (Named Outstanding Reviewer in 2010)

Flairs Special Track on Intelligent Tutoring Systems (2008-2015)

Foundations of Digital Games (2014 – senior PC)

Digital Game and Intelligent Toy Enhanced Learning (2012, 2010, 2009, 2007)

Interactive Virtual Agents (2012)

Intelligent User Interfaces (2011)

International Joint Conference on Artificial Intelligence (2011)

Flairs Special Track on Affective Computing (2011)

ICCE Conference on AIED/ITS & Adaptive Learning (ICCE) (2025, 2024, 2016-2021, 2008-2010)

User Modeling (2007)

AIED Blue Sky Track (2025)

Big Data in Education and Learning Analytics, BDELA (Track 7 – 2017)

EC-TEL Doctoral Consortium (2023)

The Workshop on Human-Centric Explainable AI in Education (HEXED) (2024)

AAAI symposium on Educational Advances in Artificial Intelligence, Special track on AI for Education (2024)

Workshop on Participatory Co-Design of Platform-Embedded Learning Experiments, LAK (2023)

Workshop on A/B Testing at Scale, ACM Learning@Scale (2023)

International Workshop on Metaverse and Artificial Companions in Education and Society (2022, 2021)

Emerging Technologies for Teachers Professional Development at Scale Workshop, ICCE (2019)

EDM'19 Workshop on EDM & Games: Leveling Up Engaged Learning with Data-Rich Analytics (2019)

Workshop on Measuring, Analyzing, and Modeling Multimodal Multichannel Data for Supporting Self-Regulated Learning by Making Systems More Intelligent for All in the 21st Century (2019)

IEEE CIG-2018 Special Session on Intelligent Games for Learning (2018)

International Workshop on Data-Driven Educational Game Design, CHI (2018)

Workshop on Online Learning Non-Cognitive Assessments at Scale, LAK (2018)

International Workshop on Context Based Affect Recognition, ACII (2017)

Integrated Analytics: MOOC Post-Course Development Workshop, LAK (2017)

MOOC Post-Course Development Workshop, LAK2017 (2017)

International Workshop on Teaching Analytics (2016)

Supporting Dynamic Cognitive, Affective, and Metacognitive Processes Workshop, ITS (2016)

Workshop on Applied and Practical Learning Analytics, EC-TEL
   (2016)
International Workshop on Affect, Meta-Affect, Data and Learning
   (2015)
Workshop on Equity, Diversity, and Inclusion in Educational
   Technology Research and Development, AIED (2023)
Workshop on Integrated Learning Analytics of MOOC Post-Course
   Development (2017)
Workshop on Graph-based Educational Data Mining (2015)
Workshop on Applied and Practical Learning Analytics (2015)
Workshop on Culturally-Aware Tutoring Systems (2015, 2014, 2013)
Workshop on Non-Cognitive Factors and Personalization for Adaptive
   Learning (2014)
Workshop on Social, Motivational and Affective Dimensions of
   Learning through Social Interaction (2014)
Workshop on Knowledge Discovery in MOOCs (2014)
Workshop on Modeling Large Scale Social Interaction in Massively
   Open Online Courses, EMNLP (2014)
Workshop on Cross-cultural Differences and Learning Technologies for
   the Developing World (LT4D), AIED (2013)
moocshop, AIED (2013)
Towards Theory and Practice of Teaching Analytics Workshop, EC-
   TEL (2012)
Workshop on Intelligent Support for Learning in Groups (2014, 2012)
Workshop on Self-Regulated Learning in Educational Technologies,
   AIED (2013), ITS (2012)
Workshop on Sentiment Discovery from Affective Data, ECML/PKDD
   (2012)
Workshop on Knowledge Discovery in Educational Data (2011)
International Workshop on Empathic Computing (2015, 2011)
International Workshop on Intelligent Support in Exploratory
   Environments, ECTEL (2010, 2008), AIED (2009), ICLS (2010)
Workshop on Closing the Affective Loop in Intelligent Learning
   Environments, AIED (2009)
Workshop on Emotional and Cognitive Issues in ITS, ITS (2008)
International Workshop on Metacognition and Self-Regulated Learning
   in ITS, ITS (2008)
Workshop on Education Informatics, ECAI (2008)
Workshop on Educational Data Mining, ICALT (2007)
Workshop on Educational Data Mining, AIED (2007)
International Workshop on Applying Data Mining in e-Learning,
   EC-TEL (2007)
Workshop on Metacognition and Self-Regulated Learning in
   Intelligent Tutoring Systems, AIED (2007)

Other Conference Reviewing.
Big Data in Education (2024)
Affective Computing and Intelligent Interaction (2024, 2023)
International Computing Education Research (2023)
Quantitative Ethnography (2022)
ACM Learning @ Scale (2021, 2018)

APS Mind, Technology, Society (2018)
Cognitive Science Society (2022-2025, 2017, 2014, 2012, 2011, 2007,
        2005, 2003)
Learning Sciences (2023, 2016, 2014, 2022 – senior reviewer, 2010)
 Computer-Human Interaction (2018, 2014, 2012, 2009, 2008, 2007)
American Educational Research Association (2012, 2010, 2009, 2003)
 Intelligent Tutoring Systems (2008, 2006, 2002)
Computers in Education (2020, 2008, 2006)
 Artificial Intelligence in Education (2007, 2005, 2003)
Intelligent User Interfaces (2008)
User Modeling (2007, 2003)
User Interface Software and Technology (2007)
Digital Game and Intelligent Toy Enhanced Learning (2007)
Cognitive Modeling (2004)
European Cognitive Science Society (2003)
Learning Sciences Conference (2002)
Workshop on Social and Emotional Intelligence in Learning
        Environments, ITS (2004)

Other Journal Reviewing.
Nature Human Behaviour (2025)
Cognitive Science (2025)
Social Innovation Journal (2025)
npj Science of Learning (2024)
ACM Computing Surveys (2024)
Journal of Computing in Higher Education (2024)
Education Policy Analysis Archives (2024)
Expert Systems with Applications (2024)
Research and Practice in Technology-Enhanced Learning (2023)
Educational Psychology Review (2023-2025)
Educational Assessment (2023)
Technology, Mind, and Brain (2023)
Current Directions in Psychological Science (2023)
Asia Pacific Education Review (2023)
IEEE Transactions on Education (2023, 2022)
Open Education Studies (2022)
IEEE Pervasive Computing (2022)
Computers and Education: Artificial Intelligence (2022)
Journal of Computers in Education (2021)
Technology, Knowledge, and Learning (2023, 2022, 2021)
Applied Intelligence (2021)
AI and Society: Knowledge, Culture, & Communication (2022, 2021)
Journal of Educational Psychology (2023, 2021)
Behavior Research Methods (2022, 2021)
Interactive Learning Environments (2022, 2021)
American Educational Research Journal (2021)
Future Generation Computer Systems (2021)
Computers and Human Behavior (2021, 2013)
Psychological Science (2020)
AERA Open (2020)
Journal of Research on Educational Effectiveness (2020, 2019)

Education Policy Analysis Archives (2020)
Gulf Education and Social Policy Review (2020)
Knowledge and Information Systems (2020)
Higher Education Quarterly (2019)
Educational Technology Research & Development (2022-2024, 2020, 2019)
Review of Educational Research (2019)
Computers & Education (2025, 2023, 2022, 2019, 2014)
Journal of Educational Measurement (2024, 2018)
IEEE Transactions on Learning Technologies (2023, 2022, 2018)
Behaviormetrika (2018)
Journal of Computer Assisted Learning (2024, 2022, 2018, 2017, 2011, 2008, 2007)
New Review of Hypermedia and Multimedia (2018)
ACM Transactions on Computing Education (2017)
British Journal of Educational Technology (2024, 2022, 2021, 2020, 2019, 2017)
IEEE Transactions on Affective Computing (2018, 2017)
Quality Assurance in Education (2017)
Learning and Instruction (2018, 2017)
Journal of Learning Analytics (2024, 2023, 2018, 2017)
The Internet and Higher Education (2022, 2015)
Research in Higher Education (2016, 2015)
Educational Researcher (2020, 2015)
International Journal of Human-Computer Interaction (2015)
International Journal of Learning Technologies (2015)
International Review of Research in Open and Distributed Learning (2023, 2018-2021, 2014)
International Journal of Human-Computer Studies (2014, 2012, 2011)
Philippines Journal of Science (2014)
Cognitive Development (2013)
Journal of the Learning Sciences (2022, 2015, 2013, 2012, 2009)
International Journal of Design (2013)
International Journal of Learning Technology (2013)
Teachers College Record (2025, 2012)
IEEE Transactions on Learning Technologies (2017, 2014, 2012, 2011, 2010, 2009, 2008)
ACM Transactions on Interactive Intelligent Systems (2012)
Journal of Educational and Behavioral Statistics (2012)
Journal of Educational Computing Research (2012, 2011)
IEEE Transactions on Systems, Man, and Cybernetics (2012, 2010)
Computers and Education (2011)
Journal of Intelligent Information Systems (2011)
Journal of Intelligent Information Systems (2011)
International Journal of Artificial Intelligence in Education (2025,2023, 2022, 2010, 2006)
User Modeling and User-Adapted Interaction (2010, 2008, 2007, 2006)
The Internet and Higher Education (2010)
Artificial Intelligence Journal (2008)
ACM Transactions on the Web (2007)
Journal of Visual Languages and Computing (2007)

Cognition and Instruction (2006)

Book Reviewing.   Oxford University Press (2011)

Workshop Organizing Committee. 3rd Annual Workshop on A/B Testing and Platform-Enabled Learning Research. *9th ACM Conference on Learning at Scale,* 2022.

Workshop Organizing Committee. 4th Annual Workshop on A/B Testing and Platform-Enabled Learning Research. *10th ACM Conference on Learning at Scale,* 2023.

Workshop Organizing Committee. Turn Theories into Products: Implementation of Artificial Intelligence in Education. *18th International Conference on Artificial Intelligence in Education.* 2017.

Workshop Organizing Committee. Workshop on Analyzing Student-Tutor Interaction Logs to Improve Educational Outcomes. *7th International Conference on Intelligent Tutoring Systems.* Chair: Joseph Beck. 2004.

Grant Reviewing.
Learning Engineering Virtual Institute (2023)
DARPA Tools Competition (2023)
Learning Engineering Tools Competition (2024, 2021, 2022)
Spencer Foundation (2018)
VolkswagenStiftung Foundation (2014)
Hewlett Foundation (2013)
NSF Social, Behavioral, and Economic <u>Sciences</u> (SBE) (2023, 2020, 2018, 2017, 2016, 2011)
NSF Computer & Information Science & Engineering (CISE) (2023, 2022, 2021, 2020, 2019, 2016, 2013, 2012, 2011, 2010, 2009)
NSF Education & Human Resources (EHR) (2025, 2023, 2022, 2020, 2013, 2012, 2011)
Israel Science Foundation (2012)
US Department of Education, Institute of Education Sciences (2019, 2020, 2022; principal panel member, 2021, 2023-2025)

OTHER

Scientific Advisor.   Pittsburgh Science of Learning Center DataShop (2009-2013)

Research Lead.   SoLAR Storm – distributed lab for Learning Analytics research students (2012-2013)