

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

Graduate School of Education
University of Pennsylvania
Philadelphia, PA USA
ryanshaunbaker@gmail.com
<http://www.columbia.edu/~rsb2162>

RESEARCH INTERESTS

Educational Data Mining, Learning Analytics, Student Modeling (Disengagement, Affect, Robust Learning, Knowledge, Strategic Behavior, Meta-Cognition), Intelligent Tutoring Systems, MOOCs, Serious Games/Educational Games, Science Microworlds, Longitudinal Success, Prediction Modeling, Cultural Factors, Learner-Computer Interaction

EDUCATION

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

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

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

CURRENT APPOINTMENT

Associate Professor. Graduate School of Education. University of Pennsylvania.. Summer 2016-present. Also **Director** of Penn Center for Learning Analytics.

OTHER CURRENT POSITIONS

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

Associate Editor. *International Journal of Artificial Intelligence and Education*. 2015-Present.

Honorary Adjunct Associate Professor. Department of Human Development. Teachers College, Columbia University. Summer 2016-Summer 2019.

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

Honorary Fellow. Moray House School of Education. University of Edinburgh. 2016-2017.

PRIOR PROFESSIONAL EXPERIENCE

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 Alevan

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 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

Funding as PI or Co-PI (2009-2017): \$17,786,839

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) 2016-2019. \$540,047. Award #DRL-1623730.

China Ministry of Education, Research Center of Online Education, Online Education Research Fund. MOOC Interactive Online Learning to Engage the Public in Environmental Protection Action in the US and China. Krasny, Marianne (PI). Baker, Ryan (Co-PI). 2017 -2018. 100,000 RMB, ~US \$14,490.

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) 2016-2019. \$1,492,122. Award #DRL-1561567.

Metacog, Inc. Metacog Postdoctoral Fellowship. Baker, R.S. (PI). 2016-2017. \$70,026.

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). 2015-2018. \$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 2016. \$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. Fislser, 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

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 undergrad classes 4.10)

Fall 2010, B term. (student course evals: 4.22/5.0; univ. avg. for undergrad 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 Comunicação na Web. (Design and Communication on the Web). Programa de Pós-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: 7,784 (Google Scholar, February 19, 2017)

h-index: 42 (Google Scholar, February 19, 2017)

Most cited paper: (Baker & Yacef, 2009)
(780 citations – Google Scholar, February 19, 2017)

Number of distinct co-authors on published papers: 278

Full list of citations per paper: <http://scholar.google.com/citations?hl=en&user=hvs8PEoAAAAJ>

ORCID: 0000-0002-3051-3232

Journal Papers

Andres, J.M.L., Baker, R.S., Siemens, G., Gasevic, D., Spann, C.A. (in press) Replicating 21 Findings on Student Success in Online Learning. To appear in *Technology, Instruction, Cognition, and Learning*.

Ocuppaugh, J., San Pedro, M.O., Lai, H-y., Baker, R.S., Borgen, F. (in press) Middle School Engagement with Mathematics Software and Later Interest and Self-Efficacy for STEM Careers. To appear in *Journal of Science Education and Technology*.

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).

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.

Ocuppaugh, 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 Artificial 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 Performance Assessment 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. **(159 citations – Google Scholar, February 19, 2017)**

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. **(368 citations - Google Scholar, February 19, 2017)**

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. **(478 citations – Google Scholar, October 9, 2015)**

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. **(162 citations – Google Scholar, February 19, 2017)**

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. **(146 citations – Google Scholar, February 19, 2017)**

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) JDSDL: The Data Structures Library in Java. *Dr. Dobb's Journal and Sourcebook*, April 2001, 21-33.

Book Chapters

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

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. **(170 citations – Google Scholar, February 19, 2017)**

Baker, R.S., Wang, Y., Paquette, L., Alevan, 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. (in press) 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.

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 community: 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. **(246 citations - Google Scholar, February 19, 2017)**

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. **(191 citations – Google Scholar, February 19, 2017)**

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. **(275 citations – Google Scholar, February 19, 2017)**

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

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

Crossley, S., Dascalu, M., McNamara, D., Baker, R., Trausan-Matu, S. (in press) Predicting Success in Massive Open Online Courses (MOOC) Using Cohesion Network Analysis. To appear in *International Conference on Computer-Supported Collaborative Learning*.

Slater, S., Ocuppaugh, 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., Aghababayan, 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., Sottolare, 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.

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.

Cocca, 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. **(204 citations – Google Scholar, February 19, 2017)**

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] (147 citations – Google Scholar, February 19, 2017)**

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] (194 citations – Google Scholar, February 19, 2017)**

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. **(100 citations – Google Scholar, February 19, 2017)**

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. **(289 citations – Google Scholar, February 19, 2017)**

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. **(374 citations – Google Scholar, February 19, 2017)**

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

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. **(133 citations – Google Scholar, February 19, 2017)**

Woolf, B.P., Shute, V., VanLehn, K., Burlinson, 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

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

Agnihotri, L., Essa, A., Baker, R. (in press) Impact of Student Choice of Content Adoption Delay on Course Outcomes. To appear in *Proceedings of the International Conference on Learning Analytics and Knowledge*.

Aghababayan, A., Lewkow, N. Baker, R. (in press) Exploring the Asymmetry of Metacognition. To appear in *Proceedings of the International Conference on Learning Analytics and Knowledge*.

Zimmerman, N., Baker, R. (in press) Mining Knowledge Components From Many Untagged Questions. To appear in *Proceedings of the International Conference on Learning Analytics and Knowledge*.

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.

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.

Ocuppaugh, 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., Ocuppaugh, 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*. **(328 citations – Google Scholar, February 19, 2017)**

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

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

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

Brooks, C., Baker, R., Andres, J.M.L. (in press) Infrastructure for Replication in Learning Analytics. To appear in *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*.

Ocuppaugh, 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

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., Alevan, 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 seminário 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 Ithaca 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 Matemática*.

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., Villafior, 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, Alevan, 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., Alevan, 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 Orientation. 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*.

Other Publications

Ocuppaugh, J., Baker, R.S., Rodrigo, M.M.T. (2015) *Baker Rodrigo Ocuppaugh 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.

Baker, R.S. (2013) *Big Data and Education*. Online open textbook.
<http://www.columbia.edu/~rsb2162/bigdataeducation.html>

Ocuppaugh, 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

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 Sherbrooke. 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. Miguel Andres. Ph.D. student in Teaching, Learning, and Leadership at the University of Pennsylvania. (in process)

Doctoral Advisor. Stefan Slater. Ph.D. student in Teaching, Learning, and Leadership at the University of Pennsylvania. (in process)

Doctoral Advisor. Michael Aaron Hawn. Ph.D. student in Cognitive Studies in Education at Teachers College Columbia University. (in process)

Doctoral Advisor. Elle Wang (co-advisor: John Black). Ph.D. student in Cognitive Studies in Education at Teachers College Columbia University. (in process)

Doctoral Advisor. Vasiliki Georgoulas. Ph.D. student in Cognitive Studies in Education at Teachers College Columbia University (in process).

Doctoral Advisor. Victoria “Mia” Almeda. Ph.D. student in Cognitive Studies in Education at Teachers College Columbia University (in process).

Doctoral Advisor. Yang Jiang (co-advisor: John Black). Ph.D. student in Cognitive Studies in Education at Teachers College Columbia University (in process).

Doctoral Advisor. Shimin Kai. Ph.D. student in Cognitive Studies in Education at Teachers College Columbia University. (in process)

Doctoral Advisor. Zhulin Yu (co-advisor: John Black). Ph.D. student in Cognitive Studies in Education at Teachers College Columbia University. (in process)

Doctoral Advisor. Jeffrey Bender (co-advisor: Gail Kaiser). Doctoral student in Computer Science at Columbia University. (in process)

Doctoral Advisor. Jeanine DeFalco. Ph.D. student in Cognitive Studies in Education at Teachers College Columbia University. Graduated 2016. Faculty at Pace University as of 2016.

Doctoral Advisor. Maria “Sweet” San Pedro. Ph.D. student in Cognitive Studies in Education at Teachers College Columbia University. Graduated 2016. Research Scientist at ACT as of 2016.

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. Luc Paquette. Post-doctoral research associate in Human Development at Teachers College Columbia University (2013-2015). Assistant Professor at University of Illinois, Urbana-Champaign as of 2016.

Post-Doctoral Mentor. Jaelyn 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 2014.

Masters Advisor. Stefan Slater. M.S. student in Learning Analytics. (in process)

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. (in process)

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. Seth Adjei (thesis advisor: Neil Heffernan). Ph.D. student in Computer Science at Worcester Polytechnic Institute. (in process)

Doctoral Thesis Committee Member. Raha Moussavi (thesis advisor: Janice Gobert). Ph.D. student in Learning Sciences and Technologies at Worcester Polytechnic Institute. (in process)

Doctoral Thesis Committee Member. Tiantian Jin (thesis advisor: John Black). Ph.D. student in Cognitive Studies at Teachers College Columbia University. (in process)

Doctoral Thesis Committee Member. Toi Sin Arvidsson (thesis advisor: Deanna Kuhn). Ph.D. student in Cognitive Studies at Teachers College Columbia University. (in process)

Doctoral Thesis Committee Member. Alison Lee (thesis advisor: John Black). Ph.D. student in Cognitive Studies at Teachers College Columbia University. (in process)

Doctoral Thesis Committee Member. Michelle Banawan (thesis chair: Mercedes Rodrigo) Ph.D. student in Computer Science at Ateneo de Manila University. (in process)

Doctoral Thesis Committee Member. Kevin Ambrose (thesis advisor: Bruce Homer). Ph.D. student in Learning, Development, and Instruction, at the City University of New York Graduate Center. (in process)

Doctoral Thesis Committee Member. Ama Awotwi (thesis advisor: Herb Ginsburg). Ph.D. student in Cognitive Studies at Teachers College Columbia University. (in process)

Doctoral Thesis Committee Member. Douglas DiStefano. Ph.D. student at Fordham University. (in process)

Doctoral Thesis Committee Member. Rebecca Petersen (thesis advisor: Linda Beltz). Ph.D. student in Organizational Leadership at Northeastern University. (in process)

Doctoral Thesis Committee Member. Melissa Biles (thesis advisor: Jan Plass). Ph.D. student in Educational Communication and Technology at New York University. (in process)

Doctoral Thesis Committee Member. Kim Kelly (thesis advisor: Neil Heffernan). Ph.D. student in Learning Sciences and Technologies at Worcester Polytechnic Institute. (in process)

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 Aghababayan (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). (in progress)

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)

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. Ilkka Jormanainen (Ph.D. student in Computer Science at University of Eastern Finland), in process. 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. Woolf, B.P., Baker, R.S., Arroyo, I. (2017) Big Data and CSCL. Workshop at the International Conference on Computer-Supported Collaborative Learning. Philadelphia, PA, USA.

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

McGraw-Hill Education Learning Sciences Research Council. 2017.

Army Research Laboratory. UM-ARL Advisory Board. 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.

McGraw-Hill Education, 2015-2016.

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

Steering Committee. PennCLO Executive Doctoral Program. 2017-present.

Faculty Advisory Committee, Online Learning Initiative, University of Pennsylvania. 2016-present.

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

Board of Directors. *Academic Development Institute*. 2016-present.

President. Founding President. *International Educational Data Mining Society*. 2011-2015.

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

Spoke Co-Lead. Big Data in Education Spoke of the NSF Northeast Big Data Innovation Hub. 2015-present.

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.

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-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-present.

Steering Committee. Learning Analytics and Knowledge Conference / Society for Learning Analytics Research, 2011-present.

Steering Committee. ACM Learning @ Scale, 2014-present.

Editorial Board. International Journal of Artificial Intelligence in Education. 2013-present.

Editorial Board. International Journal of STEM Education. 2014-present.

Editorial Board. Technology, Knowledge, and Learning. 2013-present.

Editorial Board. Journal of Writing Analytics. 2016-present.

Institute Lead. Learning Analytics Summer Institute. Stanford, California. 2013.

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.

Board of Special Reviewers. User Modeling and User-Adapted Interaction. 2010-present.

Program Committee.

IEEE International Conference on Advanced Learning Technologies (2017)
Affective Computing and Intelligent Interaction (2017 – senior PC, 2013 – area chair, 2011)
Learning Analytics (2011-2017)
aWEAR (2016)
ACM Learning at Scale (2015, 2014)
FLAIRS (2014-2017)
Educational Data Mining (2009-2016)
User Modeling and Adaptive Personalization (2009-2017)
Artificial Intelligence and Education (2015, 2013, 2011 – senior PC, PC, 2009) (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 (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 (2016, 2010, 2009, 2008)
User Modeling (2007)
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)
Learning with MOOCs Workshop (2016, 2014)
International Workshop on Affect, Meta-Affect, Data and Learning (2015)
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)
moochshop, 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.

Cognitive Science Society (2017, 2014, 2012, 2011, 2007, 2005, 2003)
Learning Sciences (2016 – senior reviewer, 2014, 2012 – senior reviewer, 2010)
Computer-Human Interaction (2014, 2012, 2009, 2008, 2007)
American Educational Research Association (2012, 2010, 2009, 2003)
Intelligent Tutoring Systems (2008, 2006, 2002)
Computers in Education (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.

Journal of Learning Analytics (2017)
The Internet and Higher Education (2015)

Research in Higher Education (2016, 2015)
Educational Researcher (2015)
International Journal of Human-Computer Interaction (2015)
International Journal of Learning Technologies (2015)
International Review of Research in Open and Distance Learning
(2014)
Computers & Education (2014)
International Journal of Human-Computer Studies (2014, 2012, 2011)
Philippines Journal of Science (2014)
Cognitive Development (2013)
Journal of the Learning Sciences (2015, 2013, 2012, 2009)
Computers and Human Behavior (2013)
International Journal of Design (2013)
International Journal of Learning Technology (2013)
Teachers College Record (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 Computer Assisted Learning (2011, 2008, 2007)
Journal of Intelligent Information Systems (2011)
Journal of Intelligent Information Systems (2011)
International Journal of Artificial Intelligence in Education (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. Workshop on Analyzing Student-Tutor Interaction Logs to Improve Educational Outcomes. 7th *International Conference on Intelligent Tutoring Systems*. Chair: Joseph Beck. 2004.

Grant Reviewing. Israel Science Foundation (2012)
VolkswagenStiftung Foundation (2014)
Hewlett Foundation (2013)
NSF Social, Behavioral, and Economic Sciences (SBE) (2016, 2011)
NSF Computer & Information Science & Engineering (CISE) (2016,
2013, 2012, 2011, 2010, 2009)
NSF Education & Human Resources (EHR) (2013, 2012, 2011)

OTHER

Scientific Advisor.

Pittsburgh Science of Learning Center DataShop (2009-2013)

Research Lead.

SoLAR Storm – distributed lab for Learning Analytics research students
(2012-2013)