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RESEARCH AREAS OF INTEREST

- Learning Analytics, Educational Data Mining
- Learning Sciences, Instructional Design
- Adaptive Learning, Intelligent Tutoring Systems, Educational Games
- Predictive Modeling, Long-Term Outcomes, Student Modeling (Affect, Behavior, Cognition)

EDUCATION

DOCTOR OF PHILOSOPHY (PHD), COGNITIVE SCIENCE IN EDUCATION (2012 – 2016)

Teachers College Columbia University, New York, NY, USA

Doctoral Dissertation: *Middle School Learning, Academic Emotions and Engagement as Precursors to College Attendance*

Doctoral Advisor: Prof. Ryan S. Baker

MASTER OF SCIENCE (MS), COMPUTER SCIENCE (2009 – 2011)

Ateneo de Manila University, Quezon City, Philippines

Master's Thesis: *Detecting Carelessness through Contextual Estimation of Slip Probabilities among Students Using an Intelligent Tutor for Mathematics*

Advisor: Prof. Ma. Mercedes T. Rodrigo

BACHELOR OF SCIENCE (BS), ELECTRONICS AND COMMUNICATIONS ENGINEERING (2000 – 2005)

Ateneo de Manila University, Quezon City, Philippines

Graduated Cum Laude

Undergraduate Thesis: *Developing Optimal Prequalification Techniques for DSL Provisioning and Diagnostics*

WORK EXPERIENCE

RESEARCH SCIENTIST (AUGUST 2016 – PRESENT)

Learning, Assessment, and Navigation Experiences Research, Supervisor: Dr. Becky L. Bobek
ACT, Inc, Iowa City, IA, USA

DOCTORAL RESEARCH FELLOW (SEPTEMBER 2012 TO JUNE 2016)

Educational Data Mining Laboratory, Supervisor: Prof. Ryan S. Baker

Teachers College Columbia University, New York, NY, USA

ASSESSMENT TECHNOLOGY SUMMER INTERN (RESEARCH INTERN, JUNE 2015 TO AUGUST 2015)

Office of Assessment Design and Evaluation, Supervisor: Dr. G. Anthony Benner

NYC Department of Education, New York, NY, USA

GRADUATE RESEARCH ASSISTANT (AUGUST 2011 – AUGUST 2012)

Educational Psychology Laboratory, Supervisor: Prof. Ryan S. Baker
Worcester Polytechnic Institute, Worcester, Massachusetts, USA

GRADUATE RESEARCH ASSISTANT (APRIL 2010 TO APRIL 2011)

Ateneo Laboratory for the Learning Sciences, Supervisor: Prof. Mercedes T. Rodrigo
Ateneo de Manila University, Quezon City, Philippines

SOFTWARE ENGINEER (JUNE 2006 – JUNE 2009)

Pointwest Innovations Corporation, Makati City, Philippines

SOFTWARE TEST PROCESS OWNER (CONTRACTOR, DECEMBER 2006 – MARCH 2008)

Accenture Manila Delivery Centre, Mandaluyong City, Philippines

QUALITY ASSURANCE ENGINEERING INTERN (2004)

Canon Information Technologies, Quezon City, Philippines

AWARDS & HONORS

2015 NAED/SPENCER DISSERTATION FELLOWSHIP FINALIST

DOCTORAL RESEARCH FELLOWSHIP, TEACHERS COLLEGE, COLUMBIA UNIVERSITY (2012-2016)

PROFESSIONAL AFFILIATIONS

AMERICAN EDUCATIONAL RESEARCH ASSOCIATION (2017 – PRESENT)

INTERNATIONAL SOCIETY OF THE LEARNING SCIENCES (2017 – PRESENT)

SOCIETY FOR LEARNING ANALYTICS RESEARCH (2015 – PRESENT)

INTERNATIONAL EDUCATIONAL DATA MINING SOCIETY (2013 – PRESENT)

INTERNATIONAL ARTIFICIAL INTELLIGENCE IN EDUCATION SOCIETY (2011 – PRESENT)

PROFESSIONAL SERVICE (RESEARCH COMMUNITY)

CONFERENCE ORGANIZING COMMITTEE CHAIR

2019 International Conference on Learning Analytics & Knowledge, Practitioner Track

GUEST JOURNAL EDITOR (2018 TO 2019)

Journal of Learning Analytics Special Section (Beyond Cognitive Ability: Enabling Assessment of 21st Century Skills through Learning Analytics)

JOURNAL PEER REVIEWER

Advances in Methods and Practices in Psychological Science (2018, 2019)

IEEE Transactions on Learning Technologies (2017)

Journal of Learning Analytics (2017 to Present)

Journal of Educational Data Mining (2012-2015)

CONFERENCE PROGRAM COMMITTEE MEMBER

IEEE International Conference on Teaching, Assessment and Learning for Engineering (2018)
International Conference on Learning Analytics & Knowledge (2016 – present)
International Conference on Educational Data Mining (2017 – present)
International Conference on Artificial Intelligence in Education (2017)
International Conference of the Learning Sciences (2017)

PUBLICATIONS

JOURNALS

- Moore, R., Sanchez, E.I., & **San Pedro, M.O.Z.** (under review). Investigating Test Preparations Impact on Score Gains Using Quasi-Experimental Propensity Score Matching. *Educational Measurement: Issues and Practice*.
- **San Pedro, M. O. Z.**, Baker, R. S., & Heffernan, N. T. (2017). An Integrated Look at Middle School Engagement and Learning in Digital Environments as Precursors to College Attendance. *Technology, Knowledge and Learning*, 22(3), 243-270.
- Ocumpaugh, J., **San Pedro, M. O.**, Lai, H. Y., Baker, R. S., & Borgen, F. (2016). Middle school engagement with mathematics software and later interest and self-efficacy for STEM careers. *Journal of Science Education and Technology*, 25(6), 877-887.
- **San Pedro, M. O. Z.**, d Baker, R. S., & Rodrigo, M. M. T. (2014). Carelessness and Affect in an Intelligent Tutoring System for Mathematics. *International Journal of Artificial Intelligence in Education*, 24(2), 189-210.
- 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.
- Rodrigo, M.M.T., Baker, R.S.J.d., Agapito, J., Nabos, J., Repalam, M.C., Reyes, S.S., & **San Pedro, M.O.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.

BOOK CHAPTERS

- Bobek, B.L., Way, J., & **San Pedro, M. O. Z.** (in preparation). A Noncognitive Roadmap to College Student Success. *Building Bridges for Student Success: A Sourcebook for College and Universities*. Consortium for Student Retention Data Exchange
- **San Pedro, M. O. Z.** & Baker, R. S. (Under Review). Adaptive Learning and Knowledge Inference Models. In von Davier, A., Mislevy, R. & Hao, J. (eds.) *Computational Psychometrics: New Methods for a New Generation of Educational Assessment*.
- **San Pedro, M. O. Z.** & Baker, R. S. (2016). Adaptive Learning. In McCarthy, M.J. (ed.) *The Cambridge Guide to Blended Learning for Language Teaching*. Cambridge: Cambridge University Press, 234-247.

WHITE PAPERS / TECHNICAL REPORTS

- Sanchez, E., Moore, R., & **San Pedro, M.O.Z.** (2018). *Investigating test prep impact on score gains using quasi-experimental propensity score matching*. Iowa City, IA: ACT.
- **San Pedro, M. O. Z.** (2017). *Carelessness in Online Learning Environments: An Evidence-Centered Design Perspective*. SRI White Paper. Menlo Park, CA: SRI Education.

PEER-REVIEWED CONFERENCE PROCEEDINGS (FULL AND WORKSHOP PAPERS)

- Wang, Y., **San Pedro, M.O.Z.**, Joksimovic, S., & Way, J. (in press). The 2nd Workshop on Online Learning & Social Emotional Learning (SEL). In *Proceedings of the 9th International Conference on Learning Analytics and Knowledge*.
- Wang, Y., **San Pedro, M.O.Z.**, Joksimovic, S., McKinniss, T., & Way, J. (2018). Workshop on non-cognitive assessments at scale for online learning. In *Proceedings of the 8th International Conference on Learning Analytics and Knowledge*, 560-564.
- McKinniss, T., **San Pedro, M.O.Z.**, Dixon, A., & Way, J. (2018). Non-cognitive Skills: Relevance & Measurement during Online Learning. In *Proceedings of Workshop at the 8th International Conference on Learning Analytics & Knowledge*, 578-582.
- Ocumpaugh, J., Baker, R. S., **San Pedro, M. O. C. Z.**, Hawn, M. A., Heffernan, C., Heffernan, N. T., & Slater, S. A. (2017). Guidance counselor reports of the ASSISTments college prediction model (ACPM). In *Proceedings The 7th International Learning Analytics & Knowledge Conference* (pp. 479-488).
- **San Pedro, M.O.Z.**, Snow, E.L., Baker, R.S., McNamara, D., Heffernan, N. (2015). Exploring Dynamic Assessments of Affect, Behavior, and Cognition and Math State Test Achievement. In *Proceedings of the 8th International Conference on Educational Data Mining*, 85-92. (*presented paper*)
- **San Pedro, M.O.Z.**, Baker, R.S., Heffernan, N.T., & Ocumpaugh, J.L. (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 & Knowledge Conference*, 36-40. (*presented paper*)
- **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. (*presented paper*)
- 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.
- **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. (*presented paper*)
- **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. (*presented paper*)
- 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.
- **San Pedro, M.O.Z.**, 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*. (*presented paper*)
- **San Pedro, M.O.Z.**, Baker, R., & Rodrigo, M.M. (2011). Detecting Carelessness through Contextual Estimation of Slip Probabilities among Students Using an Intelligent Tutor for Mathematics. *Proceedings of 15th International Conference on Artificial Intelligence in Education*, 304-311. (*presented paper*)

CONFERENCE PRESENTATIONS (PEER-REVIEWED POSTERS, SESSIONS)

- Paek, P.L., **San Pedro, M.O.Z.**, Coulson, A., Claypool, A., & Krier, C. (in press). Miscarry of Mathematics Learning from Online Games to High-Stakes Assessments. To be presented at a paper session at the *2019 Annual Meeting of the National Council on Measurement in Education (NCME)* on April 4-8, 2019.
- **San Pedro, M.O.Z.** & Coulson, A. (in press). Content Knowledge versus Experience: Towards an Understanding of Student Hurdles during Gameplay in Math Learning. To be presented at a poster session at the *2019 Annual Meeting of the American Educational Research Association (AERA)* on April 5-9, 2019.
- **San Pedro, M.O.Z.** & Coulson, A. (in press). Trends in Student Mastery and Math Content Knowledge through Spatial-Temporal Gameplay: A Twelve-Year Look. To be presented at a structured poster session at the *2019 Annual Meeting of the American Educational Research Association (AERA)* on April 5-9, 2019.
- **San Pedro, M.O.Z.** & Zhou, Y. (in press). Exploring Teacher Noticing of Collaborative Problem-Solving with an Assessment Framework: Does Teacher Experience Matter? To be presented at a roundtable session at the *2019 Annual Meeting of the American Educational Research Association (AERA)* on April 5-9, 2019.
- Paek, P.L., **San Pedro, M.O.Z.**, Coulson, A., & Claypool, A. (2018). Uncovering conceptual misunderstandings that lead to short- and long-term challenges in mathematics. Paper presented at the *2nd the NCME Special Conference on Classroom Assessment*, Lawrence, Kansas.
- **San Pedro, M.O.Z.**, Zhou, Y., & McKinniss, T. (2018). Investigating Teacher Noticing in Students' Collaborative Problem Solving Activities within a Physics Educational Game. Poster presentation at the *2018 Annual Meeting of the American Educational Research Association (AERA)*.
- **San Pedro, M.O.Z.** (2018). Discourse Engagement during Online Test Preparation: A Social Network Analysis Approach. In Companion Proceedings of the *8th International Conference on Learning Analytics & Knowledge*, 151-152.
- Zhou, Y., & **San Pedro, M.O.Z.** (2017). Exploring Teacher Noticing in Students' Collaborative Problem-Solving Activities. Poster presentation at the *2017 Annual Conference of the Iowa Educational Research & Evaluation Association (IEREA)*.
- Snow, E.L., **San Pedro, M.O.Z.**, Jacovina, M., McNamara, D.S., Baker, R.S. (2015). Achievement versus Experience: Predicting Students' Choices during Gameplay. In *Proceedings of the 8th International Conference on Educational Data Mining*, 564-565.
- Jiang, Y., Baker, R. S., Paquette, L., **San Pedro, M.**, & Heffernan, N. T. (2015, June). Learning, Moment-by-Moment and Over the Long Term. In *Proceedings of Artificial Intelligence in Education* (pp. 654-657). Springer International Publishing.
- **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 Educational Software. Poster paper presented at the *9th Annual Machine Learning Symposium* on March 13, 2015, New York, NY.
- **San Pedro, M.O.Z.**, Ocumpaugh, J.L., Baker, R.S., & Heffernan, N.T. (2015). Predicting STEM and Non-STEM College Major Enrollment from Middle School Interaction with Mathematics Educational Software. Poster paper presented at the *8th Annual Subway Summit on Cognition and Education Research* on January 23, 2015, New York, NY.
- Baker, R.S., Heffernan, N.T., & **San Pedro, M.O.Z.** (2012). Predicting STEM Career Choice from Computational Indicators of Student Engagement within Middle School Mathematics Classes. Poster paper presented at *Worcester Polytechnic Institute's GRAD 2012 (Graduate Research Achievement Day)* on March 28, 2012, Worcester, MA

- **San Pedro, M.O.Z.,** Rodrigo, M.M., & Baker, R.S.J.d. (2011). The Relationship between Carelessness and Affect in a Cognitive Tutor. Poster paper presented at the *15th International Conference on Artificial Intelligence in Education, Young Researcher's Track (YRT)*, Auckland,NZ.

RESEARCH / ACADEMIC PARTICIPATION AND ACTIVITIES

DELEGATE (JULY 1 TO JULY 5, 2013)

Learning Analytics Summer Institute 2013
Stanford University, Stanford, CA, USA

STUDENT PARTICIPANT (JUNE 24 TO JUNE 28, 2013)

Pittsburgh Science of Learning Center (PSLC) Summer School 2013
Carnegie Mellon University, Pittsburgh, PA, USA

INVITED TALKS AND PRESENTATIONS

SPEAKER, BLACKBOARD'S WEBINAR PRESENTATION ON ANALYTICS RESEARCH (MAY 18, 2015)

Topic: Towards Long-Term and Actionable Prediction of Student Outcomes using Automated Detectors of Engagement and Affect; co-presented with Prof. Ryan S. Baker

SPEAKER, PLAYTIME ONLINE WEBINAR SERIES (JANUARY 20, 2014)

Topic: What Does Math Have to Do with Games?
<http://www.instituteofplay.org/awsm/playtime-online/what-does-math-have-to-do-with-games/>

GUEST LECTURER (SPRING 2013)

Teachers College Columbia University, New York, NY, USA
Course: HUDK 5199 – Special Topics in Educational Data Mining
Topic: Advanced Bayesian Knowledge Tracing

REFERENCES

DR. BECKY L. BOBEK (Supervisor)
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Experiences Research
ACT, Inc.
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DR. ALEX CASILLAS
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Curriculum Associates
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