

Brian Robert Belland
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106 CEDAR, University Park, PA 16802, USA

Education

Ph. D., Educational Technology, Department of Curriculum and Instruction, Purdue University 2008
Dissertation: Supporting Middle School Students' Construction of Evidence-Based Arguments: Impact of and Student Interactions with Computer-Based Argumentation Scaffolds. *Dissertation Abstracts International* 69/09 Publication No. AAT 3330215.

M. A., French, Department of French and Italian, The Ohio State University, Columbus, OH 2001

B. A., French, Department of French, The College of Wooster, Wooster, OH 1999
Thesis: La traduction du Lai de l'Ombre de l'ancien français en français moderne [Translation of the Lay of the Shadow from Ancient French to Modern French].

Study Abroad, Université de Nantes and Institut d'Etudes Européennes, Nantes, France 1997-1998

Academic Appointments

The Pennsylvania State Univ., Dept. of Ed. Psych., Counseling, and Special Ed., University Park, PA
Professor, Educational Psychology 2024-Present
Associate Professor, Educational Psychology 2018-2024
Courtesy appointments: Affiliate, Center for Socially Responsible Artificial Intelligence, *Affiliate*, Social Sciences Research Institute

Utah State University, Logan, UT
Associate Professor, Department of Instructional Technology and Learning Sciences 2014-2018
Assistant Professor, Department of Instructional Technology and Learning Sciences 2008-2014

Purdue University, West Lafayette, IN
Teaching Assistant, Department of Curriculum and Instruction 2004-2008
Educational Technology Coordinator and Instructor, Secondary Education Transition to Teaching Program 2006-2007
Research Assistant, Department of Curriculum and Instruction, Tech-Know-Build Challenge Grant 2004-2005
Lecturer, French, Department of Foreign Languages and Literatures 2002

The Ohio State University, Columbus, OH
Teaching Associate, French, Department of French and Italian 1999-2001

Business/Industry Experience

Imagination Station (A Children's Science Museum), Lafayette, IN
Co-advisor, Imagination Station Team, Engineering Projects in Community Service, School of Engineering Education, Purdue University, West Lafayette, IN 2007-2008

Eli Lilly, Lafayette, IN
Intern, XLC Services (Training Division) 2006

K-12 Experience

Tippecanoe, Lafayette, West Lafayette School Corporations (All in Tippecanoe County, IN)

Substitute Teacher, Elementary, Middle, and High School

2004

Research

Research Interests

- Machine learning to inform scaffolding customization
- Scaffolding argumentation during problem-based learning in middle and high school science
- Synthesis of scaffolding research across STEM education and education levels
- Scaffolding in preservice teacher education

Research Awards

Received national awards for 7 research papers, which employed the following approaches

1. Traditional meta-analysis (2)
2. Bayesian network meta-analysis
3. Ethnomethodology-informed qualitative analysis
4. Mixed methods approach including nested ANOVA and qualitative analysis informed by symbolic interactionism
5. Conceptual framework
6. Hierarchical linear modeling

Year	Level	Award
2021	National	American Educational Research Association Design and Technology Special Interest Group Outstanding Research Paper Award
2018	National	Association of Educational Communications and Technology Research and Theory Division Outstanding Empirical Journal Article Award
2017	National	Association of Educational Communications and Technology Research and Theory Division Outstanding Journal Article Award
2014	National	Association of Educational Communications and Technology Division of Distance Learning Crystal Award – Quantitative Focused Article
2014	Department	Utah State University Department of Instructional Technology and Learning Sciences Researcher of the Year
2010	National	National Science Foundation CAREER Award
2009	National	American Educational Research Association Instructional Technology Special Interest Group Best Paper Award
2007	National	<i>Educational Technology Research and Development</i> Young Scholar Award, awarded by the <i>Educational Technology Research and Development</i> , Research Section, Editorial Board
2007	National	Lee W. Cochran Intern, Association for Educational Communications and Technology International Convention, Anaheim, CA
2007	National	American Educational Research Association Problem-Based Education Special Interest Group Best Student Paper
2007	Department	Frank B. DeBruicker Graduate Award, Educational Technology Program, Purdue University

Impact Summary

h-index: 32

i10 index: 51

i100 index: 22

Peer-Reviewed Journal Articles (indicates graduate student co-author; ** indicates undergraduate student co-author; + indicates invited submission)*

1. *Zhang, A. Y., *Lee, E., *Dinç, E., & **Belland, B. R.** (2025). A systematic review of studies on scaffolding in statistics education. *ZDM – Mathematics Education*, 57, 763-776 [ISI indexed journal; 2023 5-year impact factor: 2.7] <https://doi.org/10.1007/s11858-025-01697-w>
2. **Belland, B. R.**, *Zhang, A. Y., *Lee, E., *Dinç, E., & Kim, C. (2025). Predicting the quality of robotics-enhanced lesson plans using motivation, academic standing, and collaboration status. *Journal of Computing in Higher Education*, 37, 1056-1077 <https://doi.org/10.1007/s12528-024-09415-3> [ISI indexed journal; 2023 5-year impact factor: 5.2]
3. Kim, C., **Belland, B. R.**, & *Vasconcelos, L., & Hill, R. B. (2024). Playful programming, social resilience, and persistent actions as drivers of preservice early childhood teachers' engagement in computer science. *Sage Open*, 14(4) <https://doi.org/10.1177/21582440241284488> [ISI indexed journal; 2022 5-year impact factor: 2.3]
4. **Belland, B. R.**, Kim, C., *Dinc, E., & *Zhang, A. Y. (2024). Transfer of responsibility from scaffolding to preservice early childhood teachers learning to debug. *Educational Technology Research and Development*, 72, 1439-1464 <https://doi.org/10.1007/s11423-024-10347-z> [ISI indexed journal; 2022 5-year impact factor: 5.4]
5. Kim, C., *Dinç, E., *Lee, E., *Baabduallah, A., *Zhang, A. Y., & **Belland, B. R.** (2023). Revisiting analogical reasoning in computing education: Use of similarities between robot programming tasks in debugging. *Journal of Educational Computing Research* <https://doi.org/10.1177/07356331221142912> [ISI-indexed journal; 2022 5-year impact factor = 4.7]
6. **Belland, B. R.**, Kim, C., *Zhang, A. Y., & *Lee, E. (2023). A generalized estimating equations approach to investigate predictors of teacher candidates' views of coding. *ACM Transactions on Computing Education*, 23(2), 29.1-29.23 <https://doi.org/10.1145/3587163> [ISI-indexed journal; 2022 5-year impact factor = 3.6]
7. **Belland, B. R.**, *Lee, E., *Zhang, A., & Kim, C. (2022). Characterizing the most effective scaffolding approaches in engineering and technology education: A clustering approach. *Computer Applications in Engineering Education*, 30(6), 1795-1812. <http://doi.org/10.1002/cae.22556> [ISI-indexed journal; 2022 5-year impact factor = 2.2].
8. **Belland, B. R.**, Kim, C., *Zhang, A., *Lee, E., & *Dinç, E. (2022). Classifying the quality of robotics-enhanced lesson plans using motivation variables, word count, and sentiment analysis of reflections. *Contemporary Educational Psychology*, 69 <https://doi.org/10.1016/j.cedpsych.2022.102058> [ISI-index journal; 2022 5-year impact factor = 8.0]
9. Kim, C., Vasconcelos, L., **Belland, B. R.**, Umutlu, D., & Gleasman, C. (2022). Debugging behaviors of novice programming learners with or without scaffolding. *International Journal of Educational Technology in Higher Education*, 19(26) <http://doi.org/10.1186/s41239-022-00319-9> [ISI-index journal; 2022 5-year impact factor = 9.4]

10. *Kim, N. J., *Vicenti, C. R., & **Belland, B. R.** (2022). Influence of scaffolding on information literacy and argumentation skills in virtual field trips and problem-based learning for scientific problem solving. *International Journal of Science and Mathematics Education*, 20, 215–236 <https://doi.org/10.1007/s10763-020-10145-y> [ISI-indexed journal; 2022 5-year impact factor: 2.5]
11. **Belland, B. R.**, Kim, C., *Zhang, A. Y., *Baabdullah, A., & *Lee, E. (2021). Using process and motivation data to predict the quality with which preservice teachers debugged higher and lower-complexity programs. *IEEE Transactions on Education*, 64(4), 374-382 <https://doi.org/10.1109/TE.2021.3059258> [ISI-indexed journal; 2021 5-year impact factor = 2.938]
12. **Belland, B. R.**, & *Kim, N. J. (2021). Predicting high school students' argumentation skill using information literacy and trace data. *The Journal of Educational Research*, 114(3), 211-221. <https://doi.org/10.1080/00220671.2021.1897967> [ISI-indexed journal; 2020 5-year impact factor = 2.726].
13. Kim, C., **Belland, B. R.**, *Baabdullah, A., *Lee, E., *Zhang, A., & *Dinç, E. (2021). An ethnomethodological study of reasoning while tinkering. *AERA Open*, 7(1), 1-25 <https://doi.org/10.1177/23328584211008111> [ISI-indexed journal; 2021 5-year impact factor = 4.166].
14. **Belland, B. R.**, *Weiss, D. M., & *Kim, N. J. (2020). High school students' agentic responses to modeling during problem-based learning. *The Journal of Educational Research*, 113(5), 374-383. <https://doi.org/10.1080/00220671.2020.1838407> [ISI-indexed journal; 2020 5-year impact factor = 2.726].
15. *Kim, N. J., **Belland, B. R.**, *Lefler, M., **Andreassen, L. Walker, A. E., & *Axelrod, D. (2020). Computer-based scaffolding targeting individuals versus groups in problem-centered instruction for STEM education: Meta-analysis. *Educational Psychology Review*, 32, 415-461 <https://doi.org/10.1007/s10648-019-09502-3> [ISI-indexed journal; 2020 5-year impact factor = 11.187].

Winning paper of the 2021 American Educational Research Association Design and Technology SIG Outstanding Research Paper Award
16. **Belland, B. R.**, *Gu, J., *Kim, N. J., **Turner, D. J., & *Weiss, D. M. (2019). Exploring epistemological approaches and beliefs of middle school students in problem-based learning. *Journal of Educational Research*, 112(6), 643-655 Doi: [10.1080/00220671.2019.1650701](https://doi.org/10.1080/00220671.2019.1650701) [ISI-indexed journal; 2019 5-year impact factor = 1.956].
17. Kuo, Y., & **Belland, B. R.** (2019). Exploring the relationship between adult learners' computer, Internet, and academic self-efficacy, and attitudes towards computers in technology-supported environments. *The Journal of Computing in Higher Education*, 31(3), 626-642. <https://doi.org/10.1007/s12528-019-09212-3> [ISI-indexed journal; 2018 5-year impact factor = 2.463].
18. **Belland, B. R.**, *Weiss, D. M., *Kim, N. J., **Piland, J., & *Gu, J. (2019). An examination of credit recovery students' use of computer-based scaffolding in a problem-based, scientific inquiry unit. *International Journal of Science and Mathematics Education*, 17(2), 273-293. <http://doi.org/10.1007/s10763-017-9872-9> [ISI-indexed journal; 2020 5-year impact factor: 2.281].
19. *Kim, N. J., **Belland, B. R.**, & Axelrod, D. (2019). Scaffolding for optimal challenge in K-12 problem-based learning. *Interdisciplinary Journal of Problem-based Learning*, 13(1), <http://doi.org/10.7771/1541-5015.1712> [Scopus-indexed journal; 2018 Citescore = 1.48 (71st percentile); 15% acceptance rate].
20. *Kim, N. J., **Belland, B. R.**, & Walker, A. E. (2018). Effectiveness of computer-based scaffolding among K-12 students engaged in problem-based learning in science: Bayesian meta-analysis. *Educational Psychology Review*, 20(2), 397-429. <http://doi.org/10.1007/s10648-017-9419-1> [ISI-indexed journal; 2018 5-year impact factor = 6.703].

21. *Weiss, D. M., & **Belland, B. R.** (2018). PBL group autonomy in a high school environmental science class. *Technology, Knowledge, and Learning*, 23(1), 83–107. <http://doi.org/10.1007/s10758-016-9297-5> [Scopus-indexed journal; 2016 CiteScore = 1.88 (88th percentile)].
22. **Belland, B. R.**, Walker, A. E., & *Kim, N. J. (2017). A Bayesian network meta-analysis to synthesize the influence of contexts of scaffolding use on cognitive outcomes in STEM education. *Review of Educational Research*, 87(6), 1042-1081. <http://doi.org/10.3102/0034654317723009> [ISI-indexed journal; 2017 5-year impact factor: 10.129].
**Winning paper of the 2018 Association of Educational Communications and Technology Research and Theory Division Outstanding Empirical Journal Article Award
23. **Belland, B. R.**, Walker, A. E., *Kim, N. J., & *Lefler, M. R. (2017). Synthesizing results from empirical research on computer-based scaffolding in STEM education: A meta-analysis. *Review of Educational Research*, 87(2), 309-344. <http://doi.org/10.3102/0034654316670999> [ISI-indexed journal; 2017 5-year impact factor: 10.129].
**Winning paper of the 2017 Association of Educational Communications and Technology Research and Theory Division Outstanding Journal Article Award
24. *Gardner, J., & **Belland, B. R.** (2017). Problem-centered supplemental instruction in biology: Influence on content recall, content understanding, and problem solving ability. *Journal of Science Education and Technology*, 26, 383-393. <http://doi.org/10.1007/s10956-017-9686-0> [ISI-indexed journal; 2017 5-year impact factor: 1.840].
25. Kuo, Y. C., **Belland, B. R.**, & *Kuo, Y. T. (2017). Learning through blogging: Students' perspectives in collaborative blog-supported learning communities. *Educational Technology and Society*, 20(2), 37-50. [https://doi.org/10.30191/ETS.201704_20\(2\).0004](https://doi.org/10.30191/ETS.201704_20(2).0004) [ISI-indexed journal; 2017 5-year impact factor: 2.326]
26. **Belland, B. R.**, *Gu, J., *Kim, N., & **Turner, D. J. (2016). An ethnomethodological perspective on how middle school students addressed a water quality problem. *Educational Technology Research & Development*, 64(6), 1135-1161. <http://doi.org/10.1007/s11423-016-9451-8> [ISI-indexed journal; 2016 5-year impact factor: 1.652; acceptance rate: 8%].
27. Kuo, Y. C., & **Belland, B. R.** (2016). An exploratory study of adult learners' perceptions of online learning: Minority students in continuing education. *Educational Technology Research & Development*, 64(4), 661-680. <http://doi.org/10.1007/s11423-016-9442-9> [ISI-indexed journal; 2016 5-year impact factor: 1.652; acceptance rate: 8%].
28. +**Belland, B. R.** (2016). Developing my perspectives on scaffolding and problem-based learning: A retrospective view. *Interdisciplinary Journal of Problem-based Learning*, 10(2) <http://doi.org/10.7771/1541-5015.1616> [Scopus-indexed journal; 2016 CiteScore: 1.38 (77th percentile); 15% acceptance rate].
29. **Belland, B. R.**, *Burdo, R., & *Gu, J. (2015). A blended professional development program to help a teacher learn to provide one-to-one scaffolding. *Journal of Science Teacher Education*, 26(3), 263-289. <http://doi.org/10.1007/s10972-015-9419-2> [Scopus-indexed journal; 2015 CiteScore: 1.04 (67th percentile); Acceptance rate: 19%].
30. **Belland, B. R.**, *Gu, J., **Armbrust, S., & **Cook, B. (2015). Scaffolding argumentation about water quality: A mixed method study in a rural middle school. *Educational Technology Research & Development*, 63(3), 325-353. <http://doi.org/10.1007/s11423-015-9373-x> [ISI-indexed journal; 2015 5-year impact factor: 1.643; acceptance rate: 8%].
31. **Belland, B. R.**, Walker, A. E., *Olsen, M. W., & *Leary, H. (2015). A pilot meta-analysis of computer-based scaffolding in STEM education. *Educational Technology and Society*, 18(1), 183-197. http://www.ifets.info/journals/18_1/16.pdf [ISI-indexed journal; 2015 5-year impact factor: 1.472].

32. *Kuo, Y. C., **Belland, B. R.**, Schroeder, K. E. E., & Walker, A. E. (2014). K-12 teachers' perceptions of and their satisfaction with interaction type in blended learning environments. *Distance Education*, 35(3), 360-381. <http://doi.org/10.1080/01587919.2015.955265> [ISI-indexed journal; 2014 5-year impact factor: 0.991].
33. *Kuo, Y. C., Walker, A. E., **Belland, B. R.**, Schroder, K. E. E., & Kuo, Y. T. (2014). A case study of integrating Interwise: Interaction, Internet self-efficacy, and satisfaction in synchronous online learning environments. *The International Review of Research in Open and Distance Learning*, 15(1), 161-181. <http://www.irrodl.org/index.php/irrodl/article/view/1664/2814> [ISI-indexed journal; 2014 5-year impact factor: 1.003]
34. *Kuo, Y. C., Walker, A. E., Schroder, K. E. E., & **Belland, B. R.** (2014). Interaction, Internet self-efficacy, and self-regulated learning as predictors of student satisfaction in online education courses. *The Internet and Higher Education*, 20, 35-50. <http://doi.org/10.1016/j.iheduc.2013.10.001> [ISI-indexed journal; 2014 5-year impact factor: 2.903].
**Winning paper of the 2014 Association of Educational Communications and Technology Division of Distance Learning Crystal Award – Quantitative Focused Article
35. **Belland, B. R.**, & *Drake, J. (2013). Toward a framework on how affordances and motives can drive different uses of scaffolds: Theory, evidence, and design implications. *Educational Technology Research & Development*, 61, 903-925. <http://doi.org/10.1007/s11423-013-9313-6> [ISI-indexed journal; 2013 5-year impact factor: 1.535]
36. **Belland, B. R.**, Kim, C., & Hannafin, M. J. (2013). A framework for designing scaffolds that improve motivation and cognition. *Educational Psychologist*, 48(4), 243-270. <http://doi.org/10.1080/00461520.2013.838920> [ISI-indexed journal; 2014 5-year impact factor: 5.137; Acceptance rate: 13.6%].
37. *Kuo, Y., Walker, A. E., **Belland, B. R.** & Schroder, K. E. E. (2013). A predictive study of student satisfaction in online education programs. *The International Review of Research in Open and Distance Learning*, 14(1), 17-39. <http://www.irrodl.org/index.php/irrodl/article/view/1338> [ISI-indexed journal; 2013 impact factor: 0.748]
38. *Gardner, J. L., & **Belland, B. R.** (2012). A conceptual framework for organizing active learning experiences in biology instruction. *Journal of Science Education and Technology*, 21(4), 465-475. <http://doi.org/10.1007/s10956-011-9338-8> [ISI-indexed journal; 2011 impact factor: 0.865; Acceptance rate: 21-30%].
39. **Belland, B. R.** (2011). Distributed cognition as a lens to understand the effects of scaffolds: The role of transfer of responsibility. *Educational Psychology Review*, 23, 577-600. <http://doi.org/10.1007/s10648-011-9176-5> [ISI-indexed journal; 2011 5-year impact factor: 4.837; Acceptance rate: 11-20%].
40. **Belland, B. R.**, Glazewski, K. D., & Richardson, J. C. (2011). Problem-based learning and argumentation: Testing a scaffolding framework to support middle school students' creation of evidence-based arguments. *Instructional Science*, 39, 667-694. <http://doi.org/10.1007/s11251-010-9148-z> [ISI-indexed journal; 2011 5-year impact factor: 2.044; Acceptance rate: 21-30%]
41. **Belland, B. R.** (2010). Portraits of middle school students constructing evidence-based arguments during problem-based learning: the impact of computer-based scaffolds. *Educational Technology Research and Development*, 58(3), 285-309. <http://doi.org/10.1007/s11423-009-9139-4> [ISI-indexed journal; 2010 5-year impact factor: 1.77; Acceptance rate: 8%].

** Earlier version of this paper was the winning paper of the 2009 American Educational Research Association, Instructional Technology Special Interest Group Best Paper Award

42. **Belland, B. R.** (2009). Using the theory of habitus to move beyond the study of barriers to technology integration. *Computers & Education*, 52, 353-364. <http://doi.org/10.1016/j.compedu.2008.09.004> [ISI-indexed journal; 2009 5-year impact factor: 2.868; Acceptance rate: 20%]
43. **Belland, B. R.**, French, B. F., & Ertmer, P. A. (2009). Validity and problem-based learning research: A review of instruments used to assess intended learning outcomes. *The Interdisciplinary Journal of Problem-Based Learning*, 3(1), 59-89. <http://doi.org/10.7771/1541-5015.1059> [Acceptance Rate: 10%].
44. **Belland, B. R.**, Glazewski, K. D., & Ertmer, P. A. (2009). Inclusion and problem-based learning: Roles of students in a mixed-ability group. *Research in Middle Level Education*, 32(9). <https://doi.org/10.1080/19404476.2009.11462062> [Acceptance rate: 22%].
**Earlier version of this paper was the winning paper of the 2007 American Educational Research Association, Problem-based Education Special Interest Group Best Student Paper Award
45. **Belland, B. R.**, Glazewski, K. D., & Richardson, J. C. (2008). A scaffolding framework to support the construction of evidence-based arguments among middle school students. *Educational Technology Research and Development*, 56, 401-422. <http://doi.org/10.1007/s11423-007-9074-1> [ISI-indexed journal; 2008 5-year impact factor: 1.77; Acceptance rate: 8%]
**Winning paper of the 2007 *Educational Technology Research and Development* Young Scholar Award
46. Ertmer, P. A., Richardson, J. C., **Belland, B.**, Camin, D., Connolly, P., Coulthard, G., et al. (2007). Using peer feedback to enhance the quality of student online postings: An exploratory study. *The Journal of Computer-Mediated Communication*, 12(2), 412-433. <http://doi.org/10.1111/j.1083-6101.2007.00331.x> [ISI-indexed journal; 2007 5-year impact factor: 3.279; Acceptance rate: 20%]
47. **Belland, B. R.**, Ertmer, P. A., & Simons, K. D. (2006). Perceptions of the value of problem-based learning among students with special needs and their teachers. *The Interdisciplinary Journal of Problem-Based Learning*, 1(2), 1-18. <http://doi.org/10.7771/1541-5015.1024> [Acceptance rate: 10%]

Books

- Belland, B. R.** (2017). *Instructional scaffolding in STEM education: Strategies and efficacy evidence*. Cham, Switzerland: Springer. Available open access: <http://doi.org/10.1007/978-3-319-02565-0>
- Fee, S. B., & **Belland, B. R.** (Eds.; 2012). *The role of criticism in understanding problem solving: Honoring the work of John C. Belland*. New York, NY, USA: Springer. Hardcover ISBN: 978-1-4614-1051-5; E-book ISBN: 978-1-4614-3540-2. <http://doi.org/10.1007/978-1-4614-3540-2>

Book Chapters (* indicates graduate student co-author; ** indicates undergraduate student co-author)

1. **Belland, B. R.** (2019). Technology applications to support the design and facilitation of, and participation in problem-based learning. In M. Moaellem, W. Hung, & N. Dabbagh (Eds), *Wiley handbook of problem-based learning* (pp. 411-432). Hoboken, NJ, USA: John Wiley and Sons.
2. *Gu, J., & **Belland, B. R.** (2015). Preparing students with 21st century skills: Integrating scientific knowledge, skills, and epistemic beliefs in middle school science. In X. Ge, D. Ifenthaler, & J. M. Spector (Eds.), *Emerging technologies for STEAM education* (Vol. 2, pp.39-60). New York, NY, USA: Springer. http://doi.org/10.1007/978-3-319-02573-5_3

3. **Belland, B. R.** (2015). Technology-enhanced inquiry learning. In J. M. Spector (Ed.), *Encyclopedia of educational technology* (pp. 757-759). Thousand Oaks, CA, USA: SAGE.
4. **Belland, B. R.** (2014). Scaffolding: Definition, current debates, and future directions. In J. M. Spector, M. D. Merrill, J. Elen, & M. J. Bishop (Eds.), *Handbook of research on educational communications and technology* (4th Ed.; pp. 505-518). New York, NY, USA: Springer. ISBN 978-1-4614-3184-8. http://doi.org/10.1007/978-1-4614-3185-5_39.
5. **Belland, B. R.** (2013). Mindtools for argumentation, and their role in promoting ill-structured problem solving. In J. M. Spector, B. B. Lockee, S. E. Smaldino, & M. Herring (Eds.), *Learning, problem solving, and mind tools: Essays in honor of David H. Jonassen* (pp. 229-246). New York, NY, USA: Routledge.
6. **Belland, B. R.** (2012). The role of construct definition in the creation of formative assessments in game-based learning. In D. Ifenthaler, D. Eseryel, & X. Ge (Eds.), *Assessment in game-based learning: Foundations, innovations, and perspectives* (pp. 29-42). New York, NY, USA: Springer. ISBN 978-1-4614-3545-7. http://doi.org/10.1007/978-1-4614-3546-4_3
7. **Belland, B. R.** (2012). Habitus, scaffolding, and problem-based learning: Why teachers' experiences as students matter. In S. B. Fee & B. R. Belland (Eds.), *The role of criticism in understanding problem solving: Honoring the work of John C. Belland* (pp. 87-100). New York, NY, USA: Springer. ISBN 978-1-4614-1051-5. http://doi.org/10.1007/978-1-4614-3540-2_7
8. **Belland, B. R., & Fee, S. B.** (2012). Conclusion: Building on the strengths of interdisciplinarity. In S. B. Fee & B. R. Belland (Eds.), *The role of criticism in understanding problem solving: Honoring the work of John C. Belland* (pp. 245-248). New York, NY, USA: Springer. ISBN 978-1-4614-1051-5. http://doi.org/10.1007/978-1-4614-3540-2_16
9. Fee, S. B., & **Belland, B. R.** (2012). Understanding criticism and problem-based learning: An introduction. In S. B. Fee & B. R. Belland (Eds.), *The role of criticism in understanding problem solving: Honoring the work of John C. Belland* (pp. 1-10). New York, NY, USA: Springer. ISBN 978-1-4614-1051-5. http://doi.org/10.1007/978-1-4614-3540-2_1

Peer Reviewed Conference Proceedings (* indicates graduate student co-author; ** indicates undergraduate student co-author)

1. *Tan, C., *Wang, E., *Li, K., *Xu, Y., *Li, J., Dinç, E., **Belland, B. R.**, Kim, C., & Huang, S. X. Ellysia: Vision-Language Evaluation of STEM Educational Videos with a 12-Item Checklist. (In press). *Proceedings of AIED*, Seoul, Korea.
2. **Belland, B. R.**, Yin, W., *Zou, Z., *Mussoline, J. V., & Kim, C. (In press). AI-enabled Automated Scaffolding for Undergraduate Students' Learning to Debug and Reason. *CSEDU Proceedings*, Benidorm, Spain.
3. Kim, C., *Ha, J., & **Belland, B. R.** (In press). Using Bias in Computer Vision AI to Teach Undergraduates Critical AI Literacy. *CSEDU Proceedings*, Benidorm, Spain.
4. *Ha, J., *Dinç, E., *Sandoval-Llanos, J., *Zhang, A. Y., **Belland, B.**, & Kim, C. (In press). Classroom Observations for Children's Reactions to Ambient Identity Cues in a STEM Video. *Proceedings of the 2026 Annual Meeting of the International Society of the Learning Sciences*. Irvine, CA, USA: International Society of the Learning Sciences.
5. Kim, C., *Dinç, E., *Ha, J., Brobst, M., & **Belland, B. R.** (2025). Learning about Hidden Bias in Ambient Identity Cues through Seeing Visible Bias in Computer Vision AI. *Proceedings of the 2025 annual meeting of the International Society of the Learning Sciences*. Helsinki, Finland: International Society of the Learning Sciences. <https://doi.org/10.22318/icls2025.384540>
6. Kim, C., *Lee, E., *Dinç, E., Chatters, S., & **Belland, B. R.** (2024). Ambient Identity Cues for Minoritized Students in Elementary STEM Classrooms. *Proceedings of the 2024 annual meeting of the International Society of the Learning Sciences*, pp. 1658-1661. Buffalo, NY: International Society of the Learning Sciences.

7. *Gupta, V., **Belland, B. R.**, **Billups, A., & Passonneau, R. J. (2023). AI for coding education meta-analyses: An open science approach that combines machine and human intelligence. *Proceedings of the 2023 International Conference on Artificial Intelligence in Educational Technology*, pp. 14-29. Berlin, Germany. DOI: 10.1007/978-981-99-7947-9_2
8. *Zhang, A. Y., & **Belland, B. R.** (2023). Understanding pre-service teachers' perspectives on STEM and robotics classroom integration: A critical feminism perspective. *Proceedings of the 2023 Conference of the American Society for Engineering Education*, Baltimore, MD, USA.
9. Kim, C., *Dinç, E., *Lee, E., *Baabdullah, A., *Zhang, A. Y., & **Belland, B. R.** (2022). Discovery of similarities across debugging tasks in relations within and between virtual and physical objects. In C. Chinn, Y. Tan., C. Chan, & Y. Kali (Eds), *ICLS Proceedings - 16th International Conference of the Learning Sciences (ICLS) 2022* (pp. 1185-1189). Hiroshima, Japan: International Society of the Learning Sciences.
10. Kim, C., & **Belland, B. R.** (2021). Scaffolding debugging that uses tinkering. In E. de Vries, Y. Hod, & J. Ahn (Eds.), *Proceedings of the 15th International Conference of the Learning Sciences - ICLS 2021* (pp. 1099-1100). Bochum, Germany: International Society of the Learning Sciences.
11. Kim, C., **Belland, B. R.**, & Gleasman, C. (2020). Playful coding and playful learning among future early childhood educators. *Proceedings of the 2020 Meeting of the International Conference of the Learning Sciences (ICLS)* (Vol. 4, pp. 2411-2412).
12. Kim, Y. S., **Belland, B. R.**, & Kim, N. J. (2017). Profiling meta-analysis student clusters with scaffolding characteristics. *Proceedings of the Ninth Annual Post-ICIS KrAIS Research Workshop*.
13. *Kim, N. J., **Belland, B. R.**, & Kim, Y. (2017). Data mining meta-analysis coding to develop smart learning systems that dynamically customize scaffolding. *Proceedings of the 23rd Americas Conference on Information Systems*.
<http://aisel.aisnet.org/cgi/viewcontent.cgi?article=1343&context=amcis2017>
14. **Belland, B. R.**, *Kim, N. J., *Weiss, D. M., & **Piland, J. (2017). High school students' collaboration and engagement with scaffolding and information as predictors of argument quality during problem-based learning. *Proceedings of the 2017 Annual Meeting of Computer-supported Collaborative Learning (CSCL)*, 255-262. <https://repository.isls.org/handle/1/239>
15. *Kim, N. J., **Belland, B. R.**, & Walker, A. E. (2015). Effectiveness of computer-based scaffolding for K-adult students in the context of problem-centered instructional models related to STEM education: Bayesian meta-analysis. *Proceedings of selected research and development presentation at the 2015 Annual Convention of the Association for Educational Communication and Technology* (vol. 1, pp. 109-116). Indianapolis, IN: AECT.
16. **Belland, B. R.**, *Gu, J., **Armbrust, S., & **Cook, B. (2013). Using generic and context-specific scaffolding to support authentic science inquiry. In D. G. Sampson, J. M. Spector, D. Ifenthaler, & P. Isais (Eds.), *IADIS international conference on cognition and exploratory learning in the digital age (CELDA 2013)* (pp. 185-192). Fort Worth, TX, USA: IADIS.
17. **Belland, B. R.**, *Gu, J., & *Burdo, R. (2012). Computer-based scaffolding's role in developing middle school students' ability to argue about socioscientific issues. *Proceedings of selected research and development presentations at the 2012 Annual Convention of the Association for Educational Communications and Technology* (vol. 1, pp. 88-94). Louisville, KY, USA: AECT.
18. *Gu, J., & **Belland, B. R.** (2012). A scaffolding framework to promote the transfer of argumentation ability. *Proceedings of selected research and development presentations at the 2012 Annual Convention of the Association for Educational Communications and Technology* (vol. 2, pp. 273-279). Louisville, KY, USA: AECT.
19. **Belland, B. R.**, *Drake, J., & *Liu, Z. (2011). The role of affordances and motives in explaining how and why students use computer-based scaffolds. *Proceedings of the 11th Annual International Conference on Advanced Learning Technologies*, 529-531. Athens, GA, USA: IEEE. <http://doi.org/10.1109/ICALT.2011.162>
20. Pritchard, D. E., Barrantes, A., & **Belland, B. R.** (2009). What else (besides the syllabus) should students learn in introductory physics? *American Institute of Physics Proceedings*, 1179 (2009 Physics Education Research Conference), 43-46. <http://doi.org/10.1063/1.3266749>

21. **Belland, B. R.**, White, W., Glazewski, K. D., & Richardson, J. C. (2008). The Connection Log: A computer-based scaffolding system to help students build evidence-based arguments. *Proceedings of selected research and development presentations at the 2007 Annual Convention of the Association for Educational Communications and Technology* (pp. 25-35). Anaheim, CA, USA: AECT.
22. **Belland, B. R.**, Vaithinathan, V., Garcia, B., & Huang W. (2008). Collaborative and sustainable instructional design model for Service Learning. *Proceedings of selected research and development presentations at the 2007 Annual Convention of the Association for Educational Communications and Technology* (pp. 35-41). Anaheim, CA, USA: AECT.
23. Ertmer, P. A., Richardson, J. C., **Belland, B.**, Camin, D., Connolly, P., Coulthard, G., Lei, K., & Mong, C. (2006). Impact and perceived value of peer feedback in online learning environments. *Proceedings of selected research and development presentations at the 2005 Annual Convention of the Association for Educational Communications and Technology* (pp. 150-159), Orlando, FL, USA: AECT.
24. Park, S. H., Lee, E. H., Blackman, J., Ertmer, P., Simons, K., & **Belland, B.** (2006). Examining the barriers encountered when planning and implementing technology-enhanced PBL in the middle school classroom. In C. Crawford (Ed.), *Proceedings of Society for Information Technology and Teacher Education International Conference 2005* (pp. 2039-2043). Norfolk, VA, USA: Association for the Advancement of Computing in Education.
25. Simons, K. D., Ertmer, P., **Belland, B.**, Blackman, J., Lee, M., Ottenbreit, A., & Park, S. H. (2005). Middle school students in technology-enhanced problem based learning: Experiences of high and low self-directed students. In C. Crawford (Ed.), *Society for Information Technology and Teacher Education International Conference 2005* (pp. 1029-1032). Norfolk, VA, USA: Association for the Advancement of Computing in Education.

Practitioner-oriented Journal Articles (* indicates graduate student co-author)

1. *Weiss, D. M., & **Belland, B. R.** (2016). Book Review of "Transforming schools using project-based learning, performance assessment, and Common Core Standards." *Interdisciplinary Journal of Problem-based Learning*, 10(2), Article 4. <http://doi.org/10.7771/1541-5015.1663>
2. **Belland, B. R.** (2013). Our students deserve the very best! *TechTrends*, 57(5), 6-7.
3. **Belland, B. R.** (2010). A gray day for science standards. *TechTrends*, 54(5), 18-19.
4. **USU Instructional Technology and Learning Sciences Faculty.** (2009). An identity shift at Utah State University: What's in a name? *Educational Technology*, 49(4), 38-41.
5. **Belland, B. R.**, & Belland, J. C. (2008). A case study gone awry. *TechTrends*, 52(1), 15.
6. **Belland, B. R.** (2008). Understanding and applying the professional code of ethics. *TechTrends*, 52(1), 43-45.

Major revisions requested (* indicates graduate student co-author; ** indicates undergraduate student co-author)

Belland, B. R., *Lee, E., *Zhang, A. Y., *Dinç, E., *Baabdullah, A., & Kim, C. Study of prospective teachers' visual reflection on teaching preschoolers with robots.
 Kim, C., *Lee, E., *Dinc, E., & **Belland, B. R.** Analogical reasoning during debugging among novice programming learners

Manuscripts Under First Review (* indicates graduate student co-author; ** indicates undergraduate student co-author)

Kim, C., *Dinç, E., *Lee, E., *Zhang, A. Y., Chatters, S., & **Belland, B. R.** (Under review). “I want them to see themselves in my classroom”: Ambient identity cues (un)inviting racially minoritized students to STEM.

Manuscripts In Progress (* indicates graduate student co-author; ** indicates undergraduate student co-author)

Kim, C., **Belland, B. R.**, & *Umutlu, D. Epistemological pluralism revisited through the lens of abductive reasoning: Toward diversifying preservice early childhood teachers’ programming experience

Grants

Received over \$1,000,000 in funding as Principal Investigator from the National Science Foundation, as detailed below.

Funded External Grants (N = 7)

1. **Belland, B. R. (PI).** *Collaborative research: Scaffolding preservice early childhood teachers to debug during block-based programming.* National Science Foundation, IUSE (Improving Undergraduate STEM Education) program. \$136,725. 8/1/2017-7/31/2023, Award # 1906059.
2. **Belland, B. R. (PI),** & Walker, A. E. (Co-PI). *Research Experiences for Undergraduates Supplement for Impact of Scaffolding Characteristics and Study Quality on Learner Outcomes in STEM Education.* National Science Foundation REU (Research Experiences for Undergraduates) Supplement. \$12,375. 11/21/2014-8/31/2017.
3. **Belland, B. R. (PI).** *Research Experiences for Undergraduates Supplement for CAREER: Supporting Middle School Students' Construction of Evidence-based Arguments.* National Science Foundation REU (Research Experiences for Undergraduates) Supplement. \$10,070, 8/1/2014-7/31/2017.
4. **Belland, B. R. (PI),** & Walker, A. E. (Co-PI). *Impact of scaffolding characteristics and study quality on learner outcomes in STEM education: A meta-analysis.* National Science Foundation, REESE (Research and Evaluation on Education in Science and Engineering), \$297,434, 9/15/2013-8/31/2018, Award # 1251782
5. **Belland, B. R. (PI).** *Research Experiences for Undergraduates Supplement for CAREER: Supporting Middle School Students' Construction of Evidence-based Arguments.* National Science Foundation REU (Research Experiences for Undergraduates) Supplement. \$10,070, 8/1/2013-7/31/2014.
6. **Belland, B. R. (PI).** *Research Experiences for Undergraduates Supplement for CAREER: Supporting Middle School Students' Construction of Evidence-based Arguments.* National Science Foundation, REU (Research Experiences for Undergraduates) Supplement, \$14,750, 8/1/2012-7/31/2013.
7. **Belland, B. R. (PI).** *CAREER: Supporting Middle School Students' Construction of Evidence-based Arguments.* National Science Foundation, CAREER (Faculty Early Career Development Program), DRK-12, \$555,443, 8/15/2010-7/31/2017, Award # 0953046.

Funded Internal Grants (N = 6; + Indicates led to funded external grant proposal)

Kim, C. (PI), Brobst, M. (Co-PI), Ortega, M. (Co-PI), Huang, S. (Co-PI), & **Belland, B. R. (Co-PI).** Optimizing ambient cues for Latinx youth through culturally relevant use of generative AI. Social Science Research Institute Seed Funding, \$20,000, 4/1/2024-8/30/2025.

Passonneau, R. (PI) & **Belland, B. R. (Co-PI).** Diversity Track: Automated Techniques for Educational Meta-Analyses to Improve Diversity, Equity and Inclusion of Educational Policy and Classroom Methods. Center for Socially Responsible Artificial Intelligence (CSRAI) Seed Funding. \$24,933. 1/1/2022-12/1/2022.

- Belland, B. R. (PI), & Passonneau, R. (Co-PI).** Automating Meta-analysis Coding Using Natural Language Processing. Penn State College of Education Research Initiation Grant. \$9,000. 1/1/2022-12/1/2022.
- Belland, B. R. (PI), & Kim, Y. (Co-PI).** *Computer-based individualized and customized supports for K-12 students: The development of machine learning systems.* Utah State University SPARC seed grant program, \$34,507, 1/1/2017-6/30/2018.
- +**Belland, B. R. (PI), Walker, A. E. (Co-PI).** *Research Catalyst: Laying the Foundation for a Scaffolding Meta-Analysis.* Utah State University Vice President of Research Office, Research Catalyst, \$20,000, 1/1/2011-12/31/2011.
- +**Belland, B. R. (PI).** *Supporting Middle School Students' Construction of Evidence-based Arguments: A GEM Application to Support the Development of an NSF CAREER Application.* Utah State University Vice President of Research Office, Grant Enhancement Mentoring Program, \$5000, 1/1/2009-12/31/2009
- Belland, B. R. (PI).** *Summer Research Grant.* Purdue Research Foundation, Summer Dissertation Support, \$2500 plus summer tuition and fees, 5/15/2007-7/31/2007.

Refereed Presentations since 2008 (* indicates graduate student co-author; ** indicates undergraduate student co-author)

National/International

- Belland, B. R., Yin, W., *Zou, Z., *Mussoline, J. V., & Kim, C. (Pending).** AI-enabled Automated Scaffolding for Undergraduate Students' Learning to Debug and Reason. Paper accepted for presentation at CSEDU, Benidorm, Spain.
- Kim, C., *Ha, J., & **Belland, B. R. (Pending).** Using Bias in Computer Vision AI to Teach Undergraduates Critical AI Literacy. Paper accepted for presentation at CSEDU, Benidorm, Spain.
- *Chou, Y., & **Belland, B. R. (2026, April).** Socioeconomic Status and Science Achievement: The Role of Views of Science. Paper presented at the 2026 Annual Meeting of the American Educational Research Association, Los Angeles, CA, USA.
- Kim, C., *Ha, J., & **Belland, B. R. (2026, April).** Leveraging Bias in Computer Vision AI to Help Teachers learn to Create Bias-Free Learning Materials. Paper presented at the 2026 Annual Meeting of the American Educational Research Association, Los Angeles, CA, USA.
- *Shirzad, K., Kouhsari, M., & **Belland, B. R. (2026, April).** How Principals Inspire Teachers: The Mediating Role of Informal Learning in Building Self-Efficacy for Student Engagement. Paper presented at the 2026 Annual Meeting of the American Educational Research Association, Los Angeles, CA, USA.
- Kim, C., *Dinç, E., *Ha, J., Brobst, M., & **Belland, B. R. (2025, June).** Learning about Hidden Bias in Ambient Identity Cues through Seeing Visible Bias in Computer Vision AI. Paper presented at the 2025 Annual Meeting of the International Conference of the Learning Sciences, Helsinki, Finland
- Kim, C., *Zhang, A., *Lee, E., *Dinç, E., *Baabdullah, A. & **Belland, B. R. (2025, April).** Quantified Analysis of Analogical Reasoning During Debugging Among Novice Programming Learners. Poster presented at the 2025 Annual Meeting of the American Educational Research Association, Denver, CO, USA.
- Kim, C., *Lee, E., *Dinç, E., Chatters, S., & **Belland, B. R. (2024, June).** Ambient identity cues for minoritized students in elementary STEM classrooms. Paper presented at the 2024 annual meeting of the International Society of the Learning Sciences, Buffalo, NY.
- Belland, B. R., *Lee, E., *Zhang, A. Y., *Dinç, E., *Baabdullah, A., & Kim, C. (2024, April).** Study of prospective teachers' visual reflection on teaching preschoolers with robots. Paper presented at the 2024 Annual Meeting of the American Educational Research Association, Philadelphia, PA.

- *Gupta, V., **Belland, B. R.**, **Billups, A., & Passonneau, R. J. (2023, July). AI for coding education meta-analyses: An open science approach that combines machine and human intelligence. Paper accepted for presentation at the 2023 International Conference on Artificial Intelligence in Educational Technology, Berlin, Germany.
- *Zhang, A. Y., & **Belland, B. R.** (2023, June). Understanding Pre-service Teachers Perspectives on STEM and Robotics Classroom Integration: A Critical Feminism Perspective. Paper accepted for presentation at the 2023 Conference of the American Society for Engineering Education, Baltimore, MD, USA.
- Belland, B. R.**, *Zhang, A. Y., *Lee, E., *Baabdullah, A., *Dinc, E., & Kim, C. (2023, April). Predicting the quality of preservice early childhood teachers' lesson plans using cognitive and motivational challenges. Paper presented at the 2023 Annual Meeting of the American Educational Research Association, Chicago, IL.
- Kim, C., & **Belland, B. R.** (2022, June). Creating a sense of belonging in CS among students from historically underrepresented groups in CS. Workshop presented at the 2022 IUSE summit, Washington, DC.
- Kim, C., *Dinç, E., *Lee, E., *Baabdullah, A., *Zhang, A. Y., & **Belland, B. R.** (2022, June). Discovery of similarities across debugging tasks in relations within and between virtual and physical objects. Paper presented at the 2022 Annual Meeting of the International Society of the Learning Sciences.
- Kim, C., *Lee, E., *Dinc, E., & **Belland, B. R.** (2022, April). Analogical reasoning while debugging a series of buggy code. Paper presented at the 2022 Annual Meeting of the American Educational Research Association, San Diego, CA.
- Belland, B. R.**, Kim, C., *Dinc, E., & *Zhang, A. Y. (2021, August). Using lag sequential analysis to determine significant behavior transitions while debugging. Poster presented at the 2021 Annual Meeting of the European Association of Research on Learning and Instruction (EARLI).
- Belland, B. R.**, Kim, C., *Zhang, A. Y., & *Lee, E. (2021, August). Predicting early childhood education teacher candidates' views of coding. Poster presented at the 2021 Annual Meeting of the European Association of Research on Learning and Instruction (EARLI).
- Kim, C., & **Belland, B. R.** (2021, June). Scaffolding debugging that uses tinkering. Poster presented at the 2021 Annual Meeting of the International Society of the Learning Sciences.
- Kim, C., **Belland, B. R.**, *Vasconcelos, L., *Umutlu, D., & *Gleasant, C. (2021, April). Initial design of scaffolding for debugging block-based code. Paper presented at the 2021 Annual Meeting of the American Educational Research Association.
- Kim, C., **Belland, B. R.**, & *Gleasant, C. (2020, June). Playful coding and playful learning among future early childhood educators. Poster accepted for presentation at the 2020 International Conference of the Learning Sciences, Nashville, TN, USA. Unable to present due to COVID-19.
- Belland, B. R.**, Kim, C., *Lee, E., *Baabdullah, A., & **Zhang, A. Y. (2020, April). A study of predictors for debugging quality among preservice, early childhood teachers. Poster accepted for presentation at the 2020 Annual Meeting of the American Educational Research Association, San Francisco, CA, USA. <http://tinyurl.com/vwjdsqb>. Conference cancelled due to COVID-19.
- Belland, B. R.**, Kim, C., & *Lee, E. (2020, April). Customized Scaffolding for Pre-service Teachers' Problem-Solving in STEM. Paper accepted for presentation at the 2020 Annual Meeting of the American Educational Research Association, San Francisco, CA, USA. <http://tinyurl.com/sovlpuf>. Conference cancelled due to COVID-19.
- Kim, C., **Belland, B. R.**, & *Vasconcelos, L., & Hill, R. B. (2020, April). Reaction to Bugs During Robot Programming. Paper accepted for presentation at the 2020 Annual Meeting of the American Educational Research Association, San Francisco, CA, USA. <http://tinyurl.com/sss72dc>. Conference cancelled due to COVID-19.
- Kim, C., **Belland, B. R.**, & *Umutlu, D. (2020, April). Epistemological Pluralism for Diversifying Preservice Early Childhood Teachers' Programming Experience. Paper accepted for presentation at the 2020 Annual Meeting of the American Educational Research Association, San Francisco, CA, USA. <http://tinyurl.com/vg5waxo>. Conference cancelled due to COVID-19.

- Kim, N. J., Walker, A. E., **Belland, B. R.**, & *Lefler, M. R. (2019, April). An informed synthesis of experimental and quasi-experimental computer-based scaffolding research. Paper presented at the 2019 Annual Meeting of the American Educational Research Association, Toronto, Canada.
- Johnson, J., *Tuncdemir, T. A., **Belland, B. R.**, Durham, S., Han, M., Hartle, L., Johnson, K., Kim, C., Patte, M., & Sutterby, J. (2019, March). Play in higher education. Roundtable presented at the 2019 Annual Meeting of the Association for the Study of Play, Harrisonburg, VA, USA.
- *Kim, N. J., **Belland, B. R.**, & Kim, Y. S. (2018, April). Clustering the relationship between scaffolding and students' characteristics through data mining. Poster presented at the 2018 Annual Meeting of the American Educational Research Association, New York, NY, USA.
- *Weiss, D. M. & **Belland, B. R.** (2018, April). Identifying and applying participant learning preferences in professional learning supporting in-situ educational research. Paper presented at the 2018 Annual Meeting of the American Educational Research Association, New York, NY, USA.
- *Weiss, D. M. & **Belland, B. R.** (2018, April). The effect of subverting a key ground rule of PBL by providing information first. Poster presented at the 2018 Annual Meeting of the American Educational Research Association, New York, NY, USA.
- Kim, Y. S., **Belland, B. R.**, & *Kim, N. J. (2017, December). Profiling meta-analysis student clusters with scaffolding characteristics. Paper presented at the 9th Annual Post-ICIS [International Conference on Information Systems] KrAIS [Korean Chapter of the Association for Information Systems] Research Workshop, Seoul, South Korea.
- *Kim, N. J., **Belland, B. R.**, & Kim, Y. (2017, August). Data mining meta-analysis coding to develop smart learning systems that dynamically customize scaffolding. Paper presented at the Americas Conference on Information Systems, Boston, MA, USA.
- Belland, B. R.**, *Kim, N. J., *Weiss, D. M., & **Piland, J. (2017, June). High school students' collaboration and engagement with scaffolding and information as predictors of argument quality during problem-based learning. Paper presented at the 2017 Annual Meeting of Computer-supported Collaborative Learning (CSCL), Philadelphia, PA, USA.
- Belland, B. R.**, *Kim, N. J., *Weiss, D. M., & **Piland, J. (2017, May). Impact of using a generic argumentation scaffold in two successive PBL units on different topics. Paper presented at the 2017 Annual Meeting of the American Educational Research Association, San Antonio, TX, USA.
- *Kim, N. J., **Belland, B. R.**, Walker, A. E., & **Piland, J. (2017, April). Computer-based scaffolding in STEM education across countries and U.S. states: Meta-analysis and cluster analysis. Paper presented at the 2017 Annual Meeting of the American Educational Research Association, San Antonio, TX, USA.
- **Piland, J., *Kim, N. J., **Belland, B. R.**, & Walker, A. E. (2017, April). Effects of computer-based scaffolding in problem-centered approaches for engineering education: A meta-analysis. Paper presented at the 2017 Annual Meeting of the American Educational Research Association, San Antonio, TX, USA.
- Walker, A. E., **Belland, B. R.**, *Kim, N. J., & **Piland, J. (2017, April). Examining computer based scaffolding research quality through a risk of bias lens. Paper presented at the 2017 Annual Meeting of the American Educational Research Association, San Antonio, TX, USA.
- Belland, B. R.**, Walker, A. E., *Kim, N. J., & **Piland, J. (2016, December). New directions for development of and research on computer-based scaffolding emanating from meta-analyses of scaffolding. Paper presented at the 2016 Asia History, Philosophy, and Science Teaching Group (HPST) Conference, Busan, South Korea.
- *Kim, N., & **Belland, B. R.** (2016, October). *Suggestion of machine learning systems for computer-based scaffolding*. Paper presented at the 2016 AECT International Convention, Las Vegas, NV, USA.

- Ford, M. J., **Belland, B. R.**, Berland, L., Russ, R., Sandoval, W., Enyedy, N., & Chen, S. (2016, August). *Argumentation in science classrooms: Theoretical and practical perspectives*. Symposium presented at the 2016 European Association of Research on Learning and Instruction (EARLI) Argumentation SIG (SIG 26) meeting, Ghent, Belgium.
- **Andreassen, L., *Kim, N. J., *Lefler, M. R., **Belland, B. R.**, & Walker, A. E. (2016, April). *Meta-analysis comparison of effectiveness of computer-based scaffolding in complex problem solving: Individual vs. group delivery*. Paper presented at the 2016 Annual Meeting of the American Educational Research Association, Washington, DC, USA.
- Belland, B. R.**, *Gu, J., *Weiss, D. M., & *Kim, N. J. (2016, April). *An examination of credit recovery students' use of computer-based scaffolding in a problem-based, scientific inquiry unit*. Paper presented at the 2016 Annual Meeting of the American Educational Research Association, Washington, DC, USA.
- *Kim, N. J., & **Belland, B. R.** (2016, April). *Enhancing high school students' information literacy through computer-based scaffolding in problem-based learning for science learning*. Paper presented at the 2016 Annual Meeting of the American Educational Research Association, Washington, DC, USA.
- Walker, A. E., **Belland, B. R.**, *Kim, N. J., *Lefler, M. R., **Whitney, B., & **Andreassen, L. (2016, April). *Using Bayesian network meta-analysis to synthesize research on computer-based scaffolding in STEM education*. Paper presented at the 2016 Annual Meeting of the American Educational Research Association, Washington, DC, USA.
- *Kim, N., **Belland, B. R.**, & Walker, A. E. (2015, November). *Effectiveness of computer-based scaffolding in problem-centered instructional models for STEM education: Bayesian meta-analysis*. Paper presented at the 2015 AECT International Convention, Indianapolis, IN, USA.
- *Weiss, D. M. & **Belland, B. R.** (2015, November). *Promoting group process autonomy in a high school problem-based learning unit*. Paper presented at the 2015 AECT International Convention, Indianapolis, IN, USA.
- Belland, B. R.**, *Kim, N., *Lefler, M., & Walker, A. E. (2015, April). *Synthesizing results from empirical research on computer-based scaffolding in STEM education: A meta-analysis*. Paper presented at the Annual Meeting of the American Educational Research Association, Chicago, IL, USA.
- Belland, B. R.**, *Gu, J., *Kim, N., **Turner, D. J., & *Weiss, D. M. (2015, April). *The relationship between problem-based learning, epistemic beliefs, and argumentation in middle school science*. Paper presented at the Annual Meeting of the American Educational Research Association, Chicago, IL, USA.
- *Gu, J., **Belland, B. R.**, *Weiss, D. M., *Kim, N., & **Piland, J. (2015, April). *Middle school students' science interest and epistemic beliefs in a technology-enhanced, problem-based, scientific inquiry unit*. Paper presented at the Annual Meeting of the American Educational Research Association, Chicago, IL, USA.
- *Gu, J., & **Belland, B. R.** (2015, April). *Prompting adolescents' epistemic beliefs in a field-based science program: An exploratory, mixed methods study*. Paper presented at the Annual Meeting of the National Association of Research on Science Teaching, Chicago, IL, USA.
- *Kim, N. & **Belland, B. R.** (2014, November). *Optimal challenge in problem-based learning*. Paper presented at the 2014 Association for Educational Communications and Technology International Convention, Jacksonville, FL, USA.
- *Lefler, M. R., **Belland, B. R.**, Walker, A. E., & *Kim, N. (2014, November). *From the ground up: A comprehensive theoretical framework for computer-based scaffolding*. Paper presented at the 2014 Association for Educational Communications and Technology International Convention, Jacksonville, FL, USA.

- *Weiss, D. M. & **Belland, B. R.** (2014, November). *Professional development for novice PBL instructors*. Paper presented at the 2014 Association for Educational Communications and Technology International Convention, Jacksonville, FL, USA.
- Belland, B. R.**, Walker, A. E., *Kim, N. J., & *Lefler, M. R. (2014, July). *A preliminary meta-analysis on the influence of scaffolding characteristics and study and assessment quality on cognitive outcomes in STEM education*. Poster presented at the 2014 Annual Meeting of the Cognitive Science Society, Québec City, Québec, Canada.
- Belland, B. R.**, *Gu, J., *Kim, N. J., **Turner, D. J., & *Weiss, D. M. (2014, April). *How middle school students investigated water quality, evaluated evidence, and constructed arguments: An ethnomethodological study*. Paper presented at the 2014 American Educational Research Association Annual Meeting, Philadelphia, PA, USA.
- Belland, B. R.** (2013, November). *Becoming researchers to integrate technology: The role of learning research methodology in learning how to integrate technology*. Paper presented at the 2013 Association for Educational Communications and Technology International Convention, Anaheim, CA, USA.
- Belland, B. R.**, *Gu, J., **Armbrust, S., & **Cook, B. (2013, October). *Using generic and context-specific scaffolding to support authentic science inquiry*. Paper presented at Cognition and Exploratory Learning in the Digital Age (CELDA), Fort Worth, TX, USA.
- Belland, B. R.**, *Gu, J., **Armbrust, S., & **Cook, B. (2013, April). *Scaffolding middle school students' arguments about water quality: A mixed method study*. Paper presented at the 2013 American Educational Research Association Annual Meeting, San Francisco, CA, USA.
- *Gu, J., & **Belland, B. R.** (2013, April). *The role of epistemic beliefs in argumentation and science inquiry: A conceptual framework*. Poster presented at the 2013 American Educational Research Association Annual Meeting, San Francisco, CA, USA.
- Belland, B. R.**, *Gu, J., & *Burdo, R. (2012, November). *Computer-based scaffolding's role in developing middle school students' ability to argue about socioscientific issues*. Paper presented at the 2012 Association for Educational Communications and Technology International Convention, Louisville, KY, USA.
- *Gu, J., & **Belland, B. R.** (2012, November). *A scaffolding framework to promote the transfer of argumentation ability*. Paper presented at the 2012 Association for Educational Communications and Technology International Convention, Louisville, KY, USA.
- Belland, B. R.** (2012, October). *Scaffolding: Definition, current debates, and future directions*. Paper presented at the 2012 Association for Educational Communications and Technology International Convention, Louisville, KY, USA.
- Belland, B. R.**, *Burdo, R., & *Gu, J. (2012, April). *Supporting teacher professional development in PBL via distance learning technologies*. Paper presented at the 2012 American Educational Research Association Annual Meeting, Vancouver, Canada.
- Belland, B. R.**, Walker, A., *Olsen, W., & Leary, H. (2012, April). *Impact of scaffolding characteristics and study quality on learner outcomes in STEM education: A meta-analysis*. Paper presented at the 2012 American Educational Research Association Annual Meeting, Vancouver, Canada.
- *Drake, J., & **Belland, B. R.** (2012, April). *Enculturating middle school students into the scientific community using scaffolds to promote dialectical argumentation*. Paper presented at the 2012 American Educational Research Association Annual Meeting, Vancouver, Canada.

- Belland, B. R.**, *Drake, J., *Liu, Z., *Gu, J., & *Burdo, R. (2011, November). *Design and evaluation of scaffolds to support middle school students' construction of evidence-based arguments*. Paper presented at the 2011 Association for Educational Communications and Technology International Convention, Jacksonville, FL, USA.
- Belland, B. R.**, *Drake, J., & *Liu, Z. (2011, July). *The role of affordances and motives in explaining how and why students use computer-based scaffolds*. Paper presented at the 2011 IEEE International Conference on Advanced Learning Technologies, Athens, GA, USA.
- *Thomas, J. M., & **Belland, B. R.** (2011, April). *Challenges for elderly populations learning to use information and communications technologies*. Poster presented at the 2011 American Educational Research Association Annual Meeting, New Orleans, LA, USA.
- *Kuo, Y., Walker, A., Eastmond, N., **Belland, B. R.**, & Schroeder, K. (2011, April). *Interaction, Internet self-efficacy, and self-regulated learning as predictors of student satisfaction in distance education courses*. Paper presented at the 2011 American Educational Research Association Annual Meeting, New Orleans, LA, USA.
- Napper, V., **Belland, B. R.**, McBride, R. H., & *Gronseth, S. (2010, October). *How the AECT code of ethics guides instructional design for cyber learning environments*. Paper presented at the 2010 Association for Educational Communications and Technology International Convention, Anaheim, CA, USA.
- Napper, V., *Gronseth, S., & **Belland, B. R.** (2010, October). *Exploring the code of ethics: Cases and discussion*. Paper presented at the 2010 Association for Educational Communications and Technology International Convention, Anaheim, CA, USA.
- *Gardner, J., **Belland, B. R.**, *Jeon, T., *Clark, R., & Podgorski, G. (2010, October). *Testing the effectiveness of teaching microevolution using first principles of instruction*. Paper presented at the 2010 Association for Educational Communications and Technology International Convention, Anaheim, CA, USA.
- Belland, B. R.**, Walker, A., *Leary, H., *Kuo, Y., & Can, G. (2010, May). *A meta-analysis of problem-based learning corrected for attenuation and accounting for internal threats*. Paper presented at the 2010 American Educational Research Association Annual Meeting, Denver, CO, USA.
- Belland, B. R.**, Kim, C., & Hannafin, M. (2010, May). *A conceptual framework for increasing middle school students' science motivation*. Paper presented at the 2010 American Educational Research Association Annual Meeting, Denver, CO, USA.
- Belland, B. R.** (2009, October). *A transfer framework for scaffolded problem solving approaches*. Paper presented at the 2009 Association for Educational Communications and Technology Annual Conference, Louisville, KY, USA.
- Pritchard, D. E., Barrantes, A., & **Belland, B. R.** (2009, July). *What else (Besides the syllabus) should students learn in introductory physics?* Poster presented at the 2009 Physics Education Research Conference, Ann Arbor, MI, USA.
- Belland, B. R.** (2009, April). *A follow-up study on scaffolding middle school students' creation of evidence-based arguments*. Paper presented at the 2009 American Educational Research Association Annual Meeting, San Diego, CA, USA.
** Winning paper of the 2009 AERA Instructional Technology Special Interest Group Best Paper Award
- Belland, B. R.**, Glazewski, K. D., & Richardson, J. C. (2008, November). *A scaffolding framework to support the creation of evidence-based arguments among middle school students*. Paper presented at the *Educational Technology Research and Development* editorial board meeting at the 2008 Association for Educational Communications and Technology International Convention, Orlando, FL, USA.

Invited Presentations (* indicates graduate student co-author)

- Belland, B. R.**, Kim, C., *Zhang, A. Y., *Lee, E., *Dinc, E., & *Baabdullah, A. (2022, June). Cognitive and motivational challenges faced when debugging block-based code. Poster presented at the 2022 IUSE summit, Washington, DC.
- Belland, B. R.** (2019, December). Invited lecture in Joint Seminar at Yonsei University, Seoul, South Korea (Constructivist Learning Environments in the 21st Century). Covered meta-analysis and design-based research as complimentary approaches to design technologies for 21st century learning.
- Belland, B. R.** (2018, March). Presented my experience writing a funded proposal to the National Science Foundation Improving Undergraduate STEM Education program as part of Grant Workshop led by National Science Foundation Program Officers Ellen Carpenter and Robert Turley at Utah Valley University, Orem, UT.
- Belland, B. R.** (2017, December). Emerging methods for primary research and meta-analysis: Implications for online learning scholarship. Invited lecture presented at the University of Florida, Gainesville, FL, USA.
- Belland, B. R.** (2016, December). *Making problem-centered approaches work: The role of scaffolding in educating future learning designers*. Invited lecture presented at Pusan National University, Busan, South Korea.
- Belland, B. R.** (Spring 2015; Spring 2013, Spring 2012, Spring 2011, Spring 2010). *Synthesizing the literature*. Presented to a doctoral level seminar on literature reviews at the University of Georgia - EDIT 9630.
- Belland, B. R.** (2014, August). *Year 4 of CAREER: Supporting middle school students' construction of evidence-based arguments*. Poster presented at the 2014 National Science Foundation DR-K12 Principal Investigator Meeting, Washington, DC, USA.
- Belland, B. R.** (2012, November). *Grant writing*. Paper presented at the 2012 Association for Educational Communications and Technology International Convention, Louisville, KY, USA.
- Brush, T., Glazewski, K., **Belland, B. R.**, *Burdo, R. A., *Gu, J., Ottenbreit-Leftwich, A., & Leary, H. (2012, October). *Problem-based learning and teacher education*. Paper presented at the 2012 Association for Educational Communications and Technology International Convention, Louisville, KY, USA.
- Belland, B. R.** (2012, June). *Year 2 of CAREER: Supporting middle school students' construction of evidence-based arguments*. Poster presented at the 2012 National Science Foundation DR-K12 Principal Investigator Meeting, Crystal City, VA, USA.
- West, R., Inan, F., & **Belland, B. R.** (2011, November). *Building up your CV: From Ph. D. student to tenure track faculty*. Paper presented at the 2011 Association for Educational Communications and Technology International Convention, Jacksonville, FL, USA.
- Belland, B. R.** (Fall 2011). *The role of argumentation and scaffolding in thinking critically about authentic problems*. Paper presented to the Department of Instructional Psychology and Technology, Brigham Young University, Provo, UT.
- Belland, B. R.** (2010, December). *Year 1 of CAREER: Supporting middle school students' construction of evidence-based arguments*. Poster presented at the 2010 National Science Foundation DR-K12 Principal Investigator Meeting, Washington, DC, USA
- Belland, B. R.** (Fall 2010). *How to integrate research and education in NSF CAREER proposals*. Presented to untenured faculty in the Utah State University College of Engineering.

Belland, B. R. (2010, May). *Being successful with an academic job search in instructional technology*. Paper presented at the 2010 American Educational Research Association Annual Meeting, Denver, CO, USA.

Belland, B. R. (Fall 2010). *Job Search*. Presented about how to organize oneself for an academic job search to a doctoral level seminar at Purdue University.

Teaching

Teaching Awards

Year	Level	Award
2018	Department	Utah State University Department of Instructional Technology and Learning Sciences Undergraduate Mentor of the Year
2014	Department	Utah State University Department of Instructional Technology and Learning Sciences Teacher of the Year
2011	University	Utah State University Regional Campuses and Distance Education Exemplary Online Course Award for INST 6505 - Foundations of Instructional Technology and Learning Sciences
2011	University	Utah State University Regional Campuses and Distance Education Exemplary Online Course Award for INST 6310 - Foundations of Educational Technology
2007	University	2007 Purdue University Graduate Student Award for Outstanding Teaching
2007	College	2007 Purdue University College of Education Outstanding Graduate Instructor Award
2006	Department	Purdue University Department of Curriculum and Instruction Outstanding Graduate Teaching Assistant Award

Courses Taught

The Pennsylvania State University, University Park, PA

2018-Present

Department of Educational Psychology, Counseling, and Special Education

EDPSY 10 (Format: Face to face) – Individual Differences in Learning. Semester: Fall 2019, Fall 2021, Spring 2022, Fall 2022, Spring 2023, Fall 2023, Spring 2024, Fall 2024, Spring 2025, Fall 2025. Covers theories of learning and development in childhood, adolescence, and early adulthood.

EDPSY 421 (Format: Asynchronous online) – Learning Processes in Relation to Educational Practices. Semester: Fall 2022, Fall 2024. Covers learning theories and how they can be applied in classroom teaching.

EDPSY 450/PSYCH 404 (Format: Face to face) – Principles of Measurement. Semesters: Spring 2019, Spring 2020, Spring 2021, Spring 2022, Spring 2025. Covers concepts and principles related to educational measurement within quantitative, qualitative, and mixed methods research. Psych 404 is the cross listed section for undergraduate psychology majors.

EDPSY 505 (Format: Synchronous remote) – Semester: Spring 2021; Statistical Applications in Educational Research. Statistical techniques for education research, including multiple regression, one-way, two-way, and repeated measures ANOVA. Use computer software for statistical analyses.

EDPSY 506 (Format: Fall 2020: Synchronous remote; Fall 2021: Face to face) – Advanced Techniques for Analyzing Educational Experiments. Analytical and experimental control considerations for designs involving nested and/or crossed subjects. Analysis of variance and multiple comparisons via computers.

EDPSY 528 (Format: Face to face) – Instructional Psychology. Semester: Spring 2019. Covers the application of learning theories to the design of instruction.

EDPSY 530 (Format: Face to face) – Motivation. Semester: Fall 2023, Fall 2025. Covers theories of motivation and academic emotions, and their application to learning contexts.

EDPSY 559/597 (Format: Face to face) – Foundations of Meta-analysis. Semesters: Fall 2019, Fall 2020, Spring 2023, Spring 2024. Covers the application of meta-analytic techniques and interpretation and reporting of meta-analytic results.

Utah State University, Logan, UT

2008-2018

Emma Eccles Jones College of Education and Human Services

EDUC 6550 - Research for Teachers (MEd programs in College; Format: Online; Semester: Spring 2013; Spring 2014); Topics include literature review, quantitative, qualitative, and mixed method approaches, formative and summative evaluation, and research proposals.

Department of Instructional Technology and Learning Sciences

ITLS 4010 - Instructional Technology for Elementary Teachers (Format: Face-to-face; Semesters: Spring 2009; Spring 2010); Topics include pedagogical approaches like webquests, distance education and technology integration, and technology topics such as blogs, wikis, podcasts, and Microsoft Office products.

ITLS 4015 - Instructional Technology for Secondary Teachers (Format: Online; Semesters: Spring 2011); Topics included pedagogical approaches like webquests, distance education and technology integration, and technology topics such as blogs, wikis, podcasts, and Google Docs/spreadsheets.

ITLS 5195/5290/6195/6290/6960 (Format: Online; Semester: Spring 2016; Summer 2016); This is a capstone course in which multimedia minor (undergraduate), MEd, and MLTID students develop, evaluate, and iteratively improve their projects through formative evaluation, peer review, and instructor feedback.

ITLS 6310 - Foundations of Educational Technology (MEd Program; Format: Online; Semesters: Fall 2010; Fall 2011; Fall 2012 – online course design is used as an example by the LMS Instructure Canvas); Topics included history, definitions, theoretical background, and professions of instructional technology and learning sciences.

ITLS 6310 - Foundations of Instructional Technology and Learning Sciences

* Course number applied to this new course for the joint Master's core

(MS/MLTID/MEd Program; Format: Online and Face-to-Face; Semesters: Fall 2013, Fall 2015, Fall 2016; Fall 2017) Topics include history, definitions, theoretical background, and professions of instructional technology and learning sciences.

ITLS 6325 - Communication, Instruction, and the Learning Process (MEd program; Format: Online; Semesters: Summer 2009; Fall 2009); Topics include instructional implications of learning theories.

ITLS 6505 - Foundations of Instructional Technology (MS Program; Format: Online and Face-to-Face; Semesters: Fall 2008; Fall 2009, Fall 2010; Fall 2011; Fall 2012); Topics include history, definitions, theoretical background, and professions of instructional technology and learning sciences.

ITLS 6730 – Technology and its Role in the Transformation of Education (MEd program; Format: Online; Semesters: Summer 2011, Summer 2012; Summer 2013); Topics include the role of technology in the transformation of K-12 education.

ITLS 7000 - Proseminar (PhD program; Format: Face-to-face; Semesters: Every Fall semester); Each faculty member teaches it for three weeks focusing on their research interests. I teach mine on scaffolding.

ITLS 6870, 7870 - Instructional Scaffolding Seminar (Master's and PhD programs; Format: Face-to-face/online; Semesters: Spring 2011; Spring 2016); Topics include theoretical bases, trends, definitions, types of scaffolding, and current controversies.

Research Supervision

Chair, PhD Dissertations Completed (N = 6)

- Anna Yinqi Zhang (PhD, Educational Psychology, 2025). *A Systematic Review of Feminist Identity-Related Measurements and Exploration of Educational Robotics and AI From a Feminist Perspective*. (Doctoral dissertation, The Pennsylvania State University). Current position: Postdoctoral Research Associate at the University of Utah.
- David Mark Weiss (PhD, 2018). *In-situ educational research from concept to classroom implementation: A multiple paper dissertation*. (Doctoral Dissertation, Department of Instructional Technology and Learning Sciences, Utah State University, 2018). UMI number 10746060. Awards: 2018 Outstanding PhD Graduate, Department of Instructional Technology and Learning Sciences, Utah State University; Current position: Owner, CM Harbor; Adjunct Assistant Professor, Applied Learning Sciences, University of Miami
- Nam Ju Kim (PhD, 2017). *Enhancing students' higher-order thinking skills through computer-based scaffolding in problem-centered instruction*. (Doctoral Dissertation, Department of Instructional Technology and Learning Sciences, Utah State University, 2017). UMI number 10257538. Awards: 2017 Outstanding Doctoral Researcher, Department of Instructional Technology and Learning Sciences, Utah State University; Current position: Associate Professor, Department of Education, Yonsei University, Seoul, S. Korea
- Jon Thomas (PhD, 2017). *E-portfolio adoption's mediating influence on faculty perspectives: An activity theory view*. (Doctoral Dissertation, Department of Instructional Technology and Learning Sciences, Utah State University, 2017). UMI number 10280227. Current position: Director, Digital Learning Technologies, University of Utah
- Jiangyue Gu (PhD, 2016). *Epistemic beliefs of middle and high school students in a problem-based, scientific inquiry unit: An exploratory, mixed methods study*. (Doctoral Dissertation, Department of Instructional Technology and Learning Sciences, Utah State University, 2016). UMI number 10019693. Awards: 2016 Outstanding PhD Graduate, Department of Instructional Technology and Learning Sciences, Utah State University; Current position: Assistant Director, Center for Teaching, Learning, and Innovation, University of Cincinnati
- Joel L. Gardner (PhD, 2011). *Testing the Efficacy of Merrill's First Principles of Instruction in Improving Student Performance in Introductory Biology Courses*. (Doctoral Dissertation, Department of Instructional Technology and Learning Sciences, Utah State University, 2011). UMI Number 3449481. Awards: 2012 Emma Eccles Jones College of Education and Human Services (Utah State University) Outstanding Recent Graduate Award; 2010 Association for Educational Communications and Technology Intern; 2009 AECT Crystal Award; 2009 Pacificorps Design and Development Competition Finalist; Current Position: Assistant Dean, Instructional Design; Franklin University, Columbus, OH

Committee Member, PhD Graduates/Dissertations Completed (N = 13)

- Rich Bundro (PhD, Learning, Design, and Technology, 2025), *Subjective Point Allocation: A Method for Generating Incentive-Compatible Confidence Judgments*. (Doctoral dissertation, The Pennsylvania State University, 2025). Current Position: Instructor, Finance, Smeal College of Business, Penn State.
- Yi Meng (PhD, Higher Education, 2025), *The Landscape of Educational Certificates and Certifications/Licenses: Patterns of Attainment and Labor Market Returns* (Doctoral dissertation, The Pennsylvania State University, 2025).
- Azadeh Ahmadi (PhD, Counselor Education, 2024), *Cultivating growth in transgender and gender-diverse client work: The mediating roles of self-compassion and minority stress in the relationship between counselor factors and post-traumatic growth*. (Doctoral dissertation, The Pennsylvania State University, 2023). Current Position: Assistant Professor, Counseling, University of North Texas.
- Jessica Gerthe (PhD, Counselor Education, 2024), *Suicide gatekeeper trainings: A content analysis*. (Doctoral dissertation, The Pennsylvania State University, 2023). Current Position: Assistant Professor, Counseling, Montana State University.
- Shernell Elibox (PhD, Counselor Education, 2023), *Nou tout pa menm: An exploration of suicidality among college students of color* (Doctoral dissertation, The Pennsylvania State University, 2023). Current Position: Assistant Professor, Community and Trauma Counseling, Thomas Jefferson University.

- Afaf Baabdullah (PhD, Learning, Design, and Technology, 2022), *Metacognitive support for pair debugging*. (Doctoral Dissertation, The Pennsylvania State University, 2022). Current Position: Faculty member, Department of Curriculum and Instruction, King Saud University
- Yu Wang (PhD, Learning, Design, and Technology, 2020). *Comparative Investigation of Full and Focused Network Feedback on Students' Knowledge Structure and Learning*. (Doctoral Dissertation, The Pennsylvania State University, 2020). UMI number 28929473.
- Jennifer Boyer-Thurgood (PhD, Mathematics Education, 2017). *The Anatomy of Virtual Manipulative Apps: Using Grounded Theory to Conceptualize and Evaluate Educational Mathematics Apps*. (Doctoral Dissertation, Utah State University, 2017). UMI number 10287050. Current Position: Director, Elementary Mathematics Teacher Academy, Utah State University
- Stephen Tucker (PhD, Mathematics Education, 2015). *An Exploratory Study of Attributes, Affordances, Abilities, and Distance in Children's Use of Mathematics Virtual Manipulative iPad apps*. (Doctoral Dissertation, Utah State University, 2015). UMI number 3723089. Current Position: Assistant Professor, Department of Early Childhood and Elementary Education, University of Louisville.
- Matthew W. Barclay (PhD, 2011). *The Impact of Team-based Learning's Readiness Assurance Process on Virtually Isolated Adults*. (Doctoral Dissertation, Utah State University, 2011). UMI Number 3473359. Current Position: Instructional Design Faculty, Franklin University
- Young-Ah Ko (PhD, 2010). *The Effects of Pedagogical Agents on Listening Anxiety and Listening Comprehension in an English as a Foreign Language Context*. (Doctoral Dissertation, Utah State University, 2010). UMI Number 3433403.
- Yu-Chun Kuo (PhD, 2010). *Interaction, Internet Self-Efficacy, and Self-Regulated Learning as Predictors of Student Satisfaction in Distance Education Courses*. (Doctoral Dissertation, Utah State University, 2010). UMI Number 3419203. Current Position: Associate Professor, Instructional Technology, Rowan University
- Eleazar Vasquez (PhD, Special Education and Rehabilitation, 2008). *The Evaluation of Synchronous Online Tutoring for Students at Risk of Reading Failure*. (Doctoral Dissertation, Utah State University, 2008). UMI Number 3352451. Current Position: Professor, Department of Child, Family, and Consumer Sciences, Director, Toni Jennings Exceptional Education Institute, University of Central Florida

Committee Member, EdD Graduates (N = 1)

- Dustin Whitlock (EdD, School of Education, Johns Hopkins University, 2020). *Novice teacher attrition in a project-based learning school*. Available online: <http://jhir.library.jhu.edu/handle/1774.2/62608>. Current Position: Assistant Professor, Secondary Education, Louisiana Tech University.

Supervisor, Completed MS Projects (N = 6)

Note: USU ITLS moved to a model in which students complete their creative projects as part of a common class, rather than under the supervision of an individual professor, in Fall 2014

Almendra Mendizapal Zepeda (MS, Educational Psychology, Penn State, 2025). Thesis: *Exploring the role of graduate student experiences and capital factors in shaping the STEM identity and career intentions of women from underrepresented minority backgrounds: A multiple case study*.

Joyce Chou (MS, Educational Psychology, Penn State, 2025). Thesis: *Understanding the relationship between socioeconomic status and science achievement: The impact of students' views of science*.

Anna Y. Zhang (MS, Educational Psychology, Penn State, 2023). Thesis: *Understanding Pre-service Teachers' Perspectives on STEM and Robotics Classroom Integration: A Critical Feminism Perspective*.

Anne Considine-Olsen (MS, Instructional Technology and Learning Sciences, Utah State University, 2014). Internship: *Instructional technology internship: Salt Lake Community College Distance Education Department*.

Robert Magleby (MS, Instructional Technology and Learning Sciences, Utah State University, 2013). Thesis: *A student exploration of social enterprise*. Current position: Academic tutor, BEACON After School Program, Moab, UT

Ann Yandell (MS, Instructional Technology and Learning Sciences, Utah State University, 2012).
Internship: *Instructional technology internship: Lockheed Martin Space Systems Company*. Current position: Senior Learning Solutions Specialist, Rockwell Collins

Supervisor, Completed MEd Projects (N = 5)

Note: USU ITLS moved to a model in which students complete their creative projects as part of a common class, rather than under the supervision of an individual professor, in Fall 2014

Jonathan Allred (MEd, Instructional Technology and Learning Sciences, Utah State University, 2013).
Videocasting to promote software and drafting competencies in a college AutoCAD course. Current position: Adjunct Instructor, Drafting, Utah Valley University; Engineer, EDSA Howard, Provo, UT
Hank Heriford (MEd, Instructional Technology and Learning Sciences, Utah State University, 2013).
Using Google Sites to create supplemental material for Spanish students. Current Position: Spanish Teacher, Mountain View High School, Orem, UT

Nannette Petersen (MEd, Instructional Technology and Learning Sciences, Utah State University, 2013).
The effect of pullout science instruction using trained volunteers in large elementary classrooms.
Awards: 2013 Outstanding MEd Graduate, Department of Instructional Technology and Learning Sciences (Utah State University). Current position: Science Teacher, Willamette High School, Eugene, OR

Landon Smith (MEd, Instructional Technology and Learning Sciences, Utah State University, 2013).
Using technology to teach performance skills in the music classroom. Current position: Music Teacher, Mount Jordan Middle School, Canyons School District, UT

Zachary Peterson (MEd, Instructional Technology and Learning Sciences, Utah State University, 2012).
Health class website. Current position: Health Teacher, Manti High, South Sanpete School District, UT

Committee Member, Completed MSLT Project (N = 1)

Mark Grammer (MSLT, Languages, Philosophy, and Communication Studies, Utah State University, 2009)

Committee Member, Completed MS Thesis (N = 2)

Clarence Ames, Instructional Technology and Learning Sciences, Utah State University, 2013-2015
April Litchford, Department of Nutrition, Dietetics, and Food Sciences, Utah State University, 2013-2015

Chair, PhD Supervisory Committees (N = 4)

Joyce Chou (2023-present); Educational Psychology Program, The Pennsylvania State University;
Current Stage: coursework

Eunseo Lee (2018-2025); Educational Psychology Program, The Pennsylvania State University; Current Stage: Dissertation

Almendra Mendizabal Zepeda (2024-present); Educational Psychology Program, The Pennsylvania State University; Current Stage: coursework

Kosar Shirzad (2024-present); Educational Psychology Program, The Pennsylvania State University; Current Stage: coursework

Committee Member, PhD Supervisory Committees (N = 3)

Norah Alharbi (2023-present), Counselor Education Program, The Pennsylvania State University; Current Stage: Dissertation Proposal

Dan Spina (2025-present), Clinical Psychology Program, The Pennsylvania State University; Current Stage: Dissertation

Hosung You (2025-present), Workforce Education Program, The Pennsylvania State University; Current Stage: Dissertation

Faculty Mentor, National Conference on Undergraduate Research

**Carver, T., & **Piland, J. (2015, April). Middle school students' science interest and epistemic beliefs in a technology-enhanced, problem-based, scientific inquiry unit. Paper presented at the National Conference on Undergraduate Research, Spokane, WA, USA.

**Turner, J. D. (2014, April). *A case study of middle school students' science learning*. Poster presented at the National Conference on Undergraduate Research, Lexington, KY, USA.

**Cook, B., & **Armbrust, S. (2013, April). *Computer-based scaffolding and middle school students' science learning*. Poster presented at the National Conference on Undergraduate Research, La Crosse, WI, USA.

Supervisor, Graduate Research Assistants

The Pennsylvania State University

Educational Psychology, Counseling, and Special Education Graduate Assistant

Eunseo Lee (2018-2020)

Utah State University

Utah State University: SPARC: Computer-based individualized and customized supports for K-12 students: The development of machine learning systems

Ritisha Chelawat (2017-2017); Mohammed Seifeddine Fnayou (2017-2017); Nam Ju Kim (2017-2017)

National Science Foundation: Impact of Scaffolding Characteristics and Study Quality of Learner Outcomes in STEM Education: A Meta-analysis

NamJu Kim (2013-2017); Mason Lefler (2013-2016)

National Science Foundation: CAREER: Supporting Middle School Students' Construction of Evidence-based Arguments

Ryan Burdo (2011-2012); Joel Drake (2010-2011); Jiangyue Gu (2011-2016); Nam Ju Kim (2013-2017); Zhiying Liu (2011-2011); Jiwoong Shin (2010-2010); Mark Weiss (2013-2017);

Utah State University: Research Catalyst: Laying the foundation for a scaffolding meta-analysis

Whitney Olsen (2011-2011)

Utah State University: Start-up funds

Katherine Christensen (2008-2009)

Supervisor, Undergraduate Research Assistants

Utah State University: SPARC: Computer-based individualized and customized supports for K-12 students: The development of machine learning systems

Jacob Piland (Majors: Computer Science and Biological Engineering; 2016-2018)

National Science Foundation: Research Experiences for Undergraduates Supplement for CAREER: Supporting Middle School Students' Construction of Evidence-based Arguments

Sara Armbrust (Major: Elementary Education and Early Childhood Education; 2012-2013); Lori Caldwell (Major: Biological Engineering; 2014-2014); Tessa Carver (Major: Psychology; 2014-2015); Brant Cook (Major: Agricultural Education; 2012-2013); Aubree Hansen (Major: Biological Engineering; 2013-2014); Jacob Piland (Majors: Computer Science and Biological Engineering; 2014-2017); Jaden Turner (Major: Mechanical Engineering; 2013-2014)

National Science Foundation: Research Experiences for Undergraduates Supplement for Impact of Scaffolding Characteristics and Study Quality of Learner Outcomes in STEM Education: A Meta-analysis

Lindi Andreasen (Major: Elementary Education; 2014-2016); Jacob Piland (Majors: Computer Science and Biological Engineering; 2016-2017); Brett Whitney (Major: Mathematics and Statistics; 2014-2016)

Service

Service Honors

Year	Level	Award
2012	Department	Byron R. Burnham Leadership Award, Department of Instructional Technology and Learning Sciences, Utah State University
2010	National	<i>Educational Technology Research and Development</i> , Outstanding Research Reviewer
2006	National	<i>Interdisciplinary Journal of Problem-based Learning</i> , Graduate Student Reviewer of the Year

International

Advisory Panels

Advisory panel member, Synthesis project led by J. Van de Pol, H. W. Steenbeek, and H. J. M. Pennings (Utrecht University [the Netherlands]) 2015-2016

Grant Reviewing

Reviewer, Research Project Proposal, Swiss National Science Foundation 2024

Reviewer, Postdoctoral Research Application, Estonian Research Council 2022

Reviewer, Research project proposal, Netherlands Initiative for Education Research Netherlands Organization for Scientific Research (NWO) 2018

Reviewer, Research project proposal, Fonds Wetenschappelijk Onderzoek (FWO; the Belgian equivalent of the National Science Foundation), Belgium 2016

Reviewer, Internal Grant, KU-Leuven, Belgium 2014

Reviewer, Postdoctoral application, Fonds Wetenschappelijk Onderzoek (FWO; the Belgian equivalent of the National Science Foundation), Belgium 2013

National

Professional Organization Leadership since 2008

Chair, Professional Ethics Committee, Association for Educational Communications and Technology 2014-2017

Chair, Instructional Technology Special Interest Group, American Educational Research Association (Past-chair in 2012-2013; chair in 2011-2012; chair-elect in 2010-2011) 2010-2013

Program Co-Chair, Division C, Section 3b (Technology-based learning environments) American Educational Research Association 2016-2019

Program Chair, Problem-based Education Special Interest Group, American Educational Research Association 2013-2016

Co-Chair, Professional Ethics Committee, Association for Educational Communications and Technology 2013-2014

Member, Professional Ethics Committee, Association for Educational Communications and Technology 2007-2013

Treasurer/secretary, Instructional Technology Special Interest Group, American Educational Research Association 2008-2010

External Review for Promotion and Tenure, Various Universities 2015-Present

Charter School Advisory Boards

Member, Expert Advisory Panel, Provided Guidance for formation of Sierra Foothills Charter School, Cathey's Valley, CA 2011

Journal Editorial Responsibilities

Editorial Board, *Internet and Higher Education* 2025-Present

Editorial Board, *Review of Educational Research* 2024-Present

Editorial Board, *Contemporary Educational Psychology* 2017-Present

Editorial Board, *Educational Technology Research & Development*, Development Section 2014-2016

Editorial Board, *Interdisciplinary Journal of Problem-based Learning* 2013-2016

Regular Reviewer, *Computers & Education* (2009-Present), *Educational Technology Research and Development* (2007-Present), *Educational Technology and Society* (2014-2016), *Instructional Science* (2014-Present), *Interdisciplinary Journal of Problem-based Learning* (2006-Present), *Journal of Educational Psychology* (2014-Present), *Journal of the Learning Sciences* (2012-Present), *Middle Grades Research Journal* (2008-2011), *Research in Science Education* (2013-Present), *Review of Educational Research*, (2018-present), *Science Education* (2014-Present)

Ad-hoc Reviewer, *Metacognition and Learning* (2022), *Educational Psychology* (2012), *Handbook of research on educational communications and technology* (2011, 2017), *Interacting with Computers* (2013), *Journal for Research in Mathematics Education* (2010), *Journal of Educational Computing Research* (2008), *Journal of Science Education and Technology* (2014), *Learning and Individual Differences* (2011), *Technology, Knowledge and Learning* (2015)

Grant Reviewing

Panelist, National Science Foundation, Division of Research on Learning 2011, 2014, 2015, 2017, 2020, 2022

Ad-hoc Reviewer, National Science Foundation, Division of Graduate Education 2019

Panelist, National Science Foundation, Div. of Computer & Information Sciences & Engineering 2018

Ad-hoc Reviewer, National Science Foundation, Division of Behavioral and Cognitive Sciences 2017

Book Reviewing

Book proposal reviewer, Routledge (2019)

Book manuscript reviewer (2) for Pearson, Columbus, OH, USA (2013)

Book manuscript reviewer for John Wiley and Sons, San Francisco, CA, USA (2010-2011)

Book proposal reviewer for Cambridge Press, Cambridge, UK (2015)

Book proposal reviewer for Wiley-Blackwell, Boston, MA, USA (2015)

Senior Program Committee Membership

Artificial Intelligence in Education (AIED) 2026, Seoul, Korea
 International Society of the Learning Sciences (ICLS) 2026, Irvine, CA
 International Society of the Learning Sciences (ICLS) 2025, Helsinki, Finland
 International Society of the Learning Sciences (ICLS) 2024, Buffalo, NY
 International Society of the Learning Sciences (ICLS) 2023, Montréal, Canada

Program Committee Membership

Artificial Intelligence in Education (AIED) 2025, Palermo, Italy
 Artificial Intelligence in Education (AIED) 2024, Recife, Brazil
 International Conference of the Learning Sciences (ICLS) 2022, Hiroshima, Japan
 International Conference of the Learning Sciences (ICLS) 2018, London, England

Conference Reviewing

American Educational Research Association Annual Meeting (2006-Present), Artificial Intelligence in Education (2024-present), Association for Educational Communications and Technology International Convention (2008-2018), Cognitive Science Society (2014-2020), Computer-supported Collaborative Learning (CSCL) (2012-Present), Ed-Media Annual Conference (2005-2006), International Conference on Advanced Learning Technologies (2010-2012), International Conference of the Learning Sciences (2011-Present), National Association of Research on Science Teaching (NARST) (2014-Present), Teaching and Learning with Technology Conference (Purdue University) (2005)

Conference Discussant/Chair

Session Chair, 2011 Annual Meeting of the Association for Educational Communications and Technology International Convention, Orlando, FL, USA; Session Chair 2011 International Conference on Advanced Learning Technologies, Athens, GA, USA; Session Chair, 2011 Annual Meeting of the American Educational Research Association Annual Meeting, New Orleans, LA, USA; Discussant, 2010 Annual Meeting of the American Educational Research Association Annual, Denver, CO, USA; Session Chair, 2010 Annual Meeting of the American Educational Research Association Annual, Denver, CO, USA; Session Chair, 2008 Annual Meeting of the Association for Educational Communications and Technology, Orlando, FL, USA

The Pennsylvania State University

University Level

Member, Research Computing and Cyberinfrastructure Advisory Council 2019-2023

College Level

Member, Admissions Committee, D.Ed. program 2024-Present

Chair, College of Education Faculty Council 2020-2023

Chair-elect in 2020-2021, Chair in 2021-2022, Past chair in 2022-2023

Note: Faculty Council is a shared governance body akin to a faculty senate at the college level

Educational Psychology Program

Co-Chair , committee for the development of a master's program in learning analytics, Educational Psychology Program	2023-present
Chair , Assessment Committee, Educational Psychology Program	2020-2021
Member , search committee, Assistant Teaching Professor, Educational Psychology Program	2024-2025
Member , Graduate student recruitment and retention committee, Educational Psychology Program	2023-2024
Member , search committee, Open Rank faculty position, Educational Psychology and Institute for Cyber Science	2019-2020
Member , Assessment Committee, Educational Psychology Program	2019-2020, 2021-present
Member , Admissions Committee, Educational Psychology Program	2019-2020, 2021-2022
Member , search committee, Open Rank faculty position, Educational Psychology and Institute for Cyber Science	2018-2019

Utah State University

University Level

Faculty Senate Alternate	2015-2018
Member , Review Panel for Grant Enhancement Mentoring (GEM) Grant Vice President for Research Office, Utah State University	2009-2009

Other Departments

Member , Promotion and Tenure Advisory Committee for Brennan Thompson, Department of Health, Physical Education, and Recreation	2015-2018
Member , Promotion and Tenure Advisory Committee for Megan Smith, Department of Psychology	2014-2015

Department of Instructional Technology and Learning Sciences

Chair , Promotion and Tenure Advisory Committee for Jody Clarke-Midura, Department of Instructional Technology and Learning Sciences	2015-2018
Chair , New Academic Program Committee (Conducted needs assessment and development work for a new undergraduate program in ITLS)	2017-2018
Member , Promotion and Tenure Advisory Committee for Jody Clarke-Midura, Department of Instructional Technology and Learning Sciences	2014-2015
Chair , Awards Committee	2015-2018
Member , Marketing Committee	2015-2018
Chair , Awards Committee	2012-2014
Chair , Master of Science Admissions/Awards Committee	2010-2012
Member , Faculty Search Committee	2013-2014
Member , Faculty/Teaching/Evaluation/Accreditation Committee	2008-2012
Member , Curriculum Committee	2011-2012
Member , Faculty Search Committee	2011-2012

Participant, Graduate Student Recruitment Fair

2008-2014

Other

Honors (Other than Research, Teaching, and Service)

Math and Science Scholarship, The College of Wooster, Wooster, OH 1995–1999

Professional Memberships and Leadership Roles

American Educational Research Association 2004–Present

- Chair, Instructional Technology Special Interest Group (2010-2013; chair-elect in 2010-2011; chair in 2011-2012; past chair in 2012-2013)
- Program Chair, Problem-based Education Special Interest Group (2013-2016)
- Program co-chair, Division C, Section 3b (technology-based learning environments; 2016-Present)
- *SIG memberships*: Problem-based Education, Instructional Technology
- *Division membership*: C (Learning and Instruction)
- Treasurer, Instructional Technology Special Interest Group (2008-2010)

Association for Educational Communications and Technology 2005–Present

- Chair, Professional Ethics Committee (2014-2017)
- Co-chair, Professional Ethics Committee (2013-2014)
- Member, Professional Ethics Committee (2007-Present)
- Member, Organizing committee for Graduate Student Forum Sessions at the 2006 AECT Annual Conference, Dallas, TX

Association for Information Systems 2017-2018

American Psychological Association, Educational Psychology Division 2013-2014

Cognitive Science Society 2013-2014

European Association of Research on Learning and Instruction (Earli) 2015-Present

International Association for the Development of the Information Society (IADIS) 2013–2014

International Society of the Learning Sciences 2017-Present

Language Skills

English: native speaker

French: near native fluency

Italian: very high proficiency