CHRISTIAN DIETER SCHUNN

STEM learning | Web-based peer interaction and instruction
Improvement science for instruction | Engagement and learning

CONTACT

Murdoch 531; 3420 Forbes Ave. | schunn@pitt.edu | +1.412.624.8807 Voice
University of Pittsburgh | www.lrdc.pitt.edu/schunn | +1.412.721.0382 Cell

WORK

University of Pittsburgh 2001–
- Institute for Learning — Co-Director, 2016–2021; Research Liaison 2022–
- Psychology; Learning Sciences and Policy; Intelligent Systems — Assistant 2001; Associate 2006; Professor 2011–
- Learning Research & Development Center — Research Scientist 2001; Senior Scientist 2011–

Northeast Normal University 2019-2024
- School of Foreign Languages — Visiting Professor

George Mason University 1998–2001
- Psychology — Assistant Professor

EDUCATION

1996–98 Postdoc, Psychology, Carnegie Mellon University (*Advisors: John Anderson, Lynne Reder*)
1990–95 MS & PhD, Psychology, Carnegie Mellon University (*Advisor: David Klahr*)
1987–90 BS, Honors Psychology, Minors in Mathematics and Computer Science, McGill University

LEARNING MATERIALS

Writing: SWoRD/Peerceptiv
Robotics: Dancing Robots; Robots in Motion
Badging: CS2N.org
Biology: Designer Bacteria; Gecko; Stinkbug
Chemistry: Heating & Cooling
Physics: Alarm Systems; Lift Systems; Launcher

HONORS AND AWARDS

Society Fellowships
- Association for Psychological Science, 2014
- American Association for the Advancement of Science, Section Q, 2011
- American Psychology Association, Division 3, 2009
- International Society for Design & Development in Education, 2006

Journal Awards
- *Design Studies* Best Paper Award 2015 (with Joel Chan)
- John R. Hayes Award for the best article in Journal of Writing Research 2008-2010 (with Patchan & Charney)

Conference Awards
- Best Paper Award at *UMAP 2017* (with Guerra-Hollstein, Barria-Pineda, Bull & Brusilovsky)
- Best Paper Award at the *35th Computers and Information in Engineering Conference* (with Egan, Cagan, & LeDuc)
- Best Paper Award at the *24th International Conference on Design Theory and Methodology* (with Fu, Chan, Cagan, Kotovsky, Wood)
- Best work at the *ED-Media 2003* conference (with Kwangsu Cho), Hawaii, 2003

EXTERNAL GRANTS

Current — $6,006,829

1. *Collaborative research: Integrating primary research literature into large-enrollment biology classes using peer-reviewed presentation exchange*. National Science Foundation. DUE-2417453. Co-PI with Kirill Kiselyov. $333,285
2. *Effective, Coherent, and Equitable Implementation of Go Math! In El Pason Region 19*. Bill & Melinda Gates Foundation. PI with J. Dostilio, R. Correnti, B. Strawhun, L. Speranzo. $3,470,700.
3. *Course-based Adaptations of an Ecological Belonging Intervention to Transform Engineering Representation at Scale*. National Science Foundation. DUE-2111114. CoPI with K. Binning, L. DeAngelo, E. McGreevy, A. Godwin, $2,202,844.

Prior — $88,206,090

4. *Developing a Context-Integrated Mindset / Belonging Intervention to Eliminate Demographic-based Underperformance in Challenging Large Lecture Undergraduate Courses.* Institute of Education Sciences. R305A210167 CoPI with K. Binning, L. DeAngelo, E. McGreevy, R. Toutkoushian, $1,999,657.
5. *University of Pittsburgh/Institute for Learning Network for School Improvement (9th Grade On Track)*. Bill & Melinda Gates Foundation. CoPI with T. Petrosky, J. Russell, D Thompson-Dorsey, R. Apodaca, & S. DeMartino. $8,224,070.
6. *Teacher Learning to Enact Productive Discussions in Mathematics and Literacy*. James S. McDonnell Foundation. Co-PI with M. K. Stein, J. Russell, R. Correnti, & L. Matsumura. $2,499,651.
7. *Build, Understand, & Tune Interventions that Cumulate to Real Impact*. National Science Foundation, DUE-1524575, Co-PI with T. Nokes-Malach, B. Rottman, K. Binning, E. Votruba-Drzal, C. Singh, J. Grabowski, & N. Kaufmann, $1,795,922.
8. *Studying the Malleability and Impact of Science Learning Activation*. National Science Foundation, DRL-1348468. PI, CoPIs R. Dorph & M. Cannady. $1,479,490.
9. *Changing Culture in Robotics Classroom*. National Science Foundation, DRL-1416984, PI, CoPI R. Shoop, $1,568,244.
10. *Understanding and improving curriculum materials design practices for effective large-scale implementation in science.* National Science Foundation, DRL-1251562, PI, coPIs D. Bernstein, S. Mckenney, B. Drayton, J. Barber, $1,401,043.
11. *Building a theory of badges for computer science education*. National Science Foundation, CNS-1339085, PI, CoPI R. Shoop, $600,000.
12. *DDIG Understanding the Impact of Sources of Inspiration in Creative Design: The Role of Conceptual Distance*. National Science Foundation, SBE- 1360013. PI, 06/01/14-12/01/15, $15,261.
13. *Teaching Writing and Argumentation with AI-supported Diagramming and Peer Review*. National Science Foundation, IIS-1122504, Co-PI with K. Ashley & D. Litman, 09/01/11–08/31/16, $1,349,986.
14. *Intelligent Scaffolding of Peer Review of Writing*. Institute of Education Sciences, R305A120370, Co-PI with D. Litman, A. Godley and K. Ashley, 7/1/12–6/30/15, $1,498,941.
15. *Modeling Engineered Levers for the 21st Century Teaching of STEM.* National Science Foundation, DRL-1027629, PI, CoPI M. K. Stein. 09/01/10–08/31/15, $2,593,766.
16. *Connecting Research and Teaching Through Product Innovation: Quality of Life Technology RET Site*. National Science Foundation, EEC-1161880. Co-PI with J. Pearlman, 10/1/12–9/30/15, $518,179.
17. *Educational Design & Development: Planning for a STEM Learning Research Transformation*. National Science Foundation, DRL-1216850, Co-PI with F. Davis, 5/15/12–5/30/14, $49,548.
18. *Activation Design Fellows: Building Learning Pathways for Pittsburgh's Youth*. The Grable Foundation. Co-PI with K. Crowley. 6/1/12–5/30/14, $198,780.
19. *Center for the Study of Activated Science Learners*. Gordon and Betty Moore Foundation, #2820 and #3341, PI, CoPIs K. Crowley, R. Dorph, and P. Shields. 02/01/11 – 11/1/13, $3,999,646.
20. *The 21st Century Research and Development Center on Cognition and Science Education*. Institute of Education Sciences, R305C080009, Co-PI with J. Merlino, A. Porter, J. Cromley, N. Newcombe, and T. Nokes, 7/1/08–6/30/14, $9,995,038.
21. *The Robot Algebra Project.* National Science Foundation, DRL-1029404, PI, CoPIs M. K. Stein and R. Shoop. 09/01/10–08/31/13, $449,969 Pitt Contract.
22. *Fostering Innovation through Robotics Exploration*. Defense Advanced Research Projects Agency, FA8750-10-2-0165, Co-PI Investigator with R. Shoop, A. Corbett, K. Koedinger, W. Dann, H. Choset, M. Veloso, and L. Levin. 07/14/10–9/30/13, $328,364 Pitt subcontract.
23. *Advanced Analogical Search with Integrated Function and Form: The Verrocchio Project.* National Science Foundation, CMMI-0855293, Co-PI with J. Cagan and K. Wood, 07/01/09–06/30/13, $450,000.
24. *Learning Pathways for Activation in Pittsburgh*. The Sprout Fund. Co-PI with K. Crowley. 9/1/12–4/30/13, $50,000.
25. *Computer Science Student Network Badge System*. MacArthur Foundation, HASTAC/MacArthur Digital Media and Learning Badges for Lifelong Learning, Co-PI with R. Shoop, 4/1/12–3/31/13, $175,000.
26. *Training in Arithmetical Fluency.* National Science Foundation, EHR-0815945, Co-PI with J. Fiez, 9/1/08–8/31/12, $1,241,567.
27. *Assessing the Young Activated Science Learner*. Gordon and Betty Moore Foundation, #2589, PI, CoPIs K. Crowley and R. Dorph. 06/14/10 – 09/30/11, $380,000.

28. *Connecting Research and Teaching Through Product Realization: The Pittsburgh Quality of Life RET Site*. National Science Foundation, EEC-0808675, Co-PI with M. Lovell, A. Landis, and S. Balouris, 6/1/08–12/30/11, $489,700.
29. *Integrating Social and Cognitive Elements of Discovery and Innovation*. National Science Foundation, SBE-0830210, PI, 9/1/08–8/31/11, $214,556.
30. *Biologically Accelerated Learning Technology (BALT) Phase II*. Defense Advanced Research Projects Agency, NBCHC070104, Co-PI with W. Schneider, N. Tokowicz, J. Moss, and T. Huppert, 1/1/09–12/31/10, $2,360,000.
31. *Workshop on Confidential Data Collection for Innovation Analysis in Organizations*. National Science Foundation, SBE 0943337. PI, 9/15/09–9/15/10, $50,312.
32. *Design Tools to Cognitive Processes to Innovation*. National Science Foundation, SBE-0738071. PI, 1/1/08–06/31/10, $373,985 and $74,732 supplement (SBE-0823628).
33. *University of Pittsburgh for Research Experience for Teachers Innovation Generation grant.* Motorola Foundation. Co-PI with M. Lovell, 1/1/08–12/31/09, $50,000.
34. *Biologically Accelerated Learning Technology*. Defense Advanced Research Projects Agency, Co-PI with W. Schneider, N. Tokowicz, and K. VanLehn, 3/1/07–9/30/08, $1,168,781.
35. *Robotics Corridor*. National Science Foundation, DUE-0703104, PI on Subcontract, 5/1/07–4/30/10, $149,729 subcontract.
36. *Evaluation of a Robotics Curriculum*. Heinz Foundation, PI on Subcontract, 1/1/07–12/31/07, $38,054 subcontract.
37. *Evaluation of Open Learning Initiative Logic & Proofs*. Hewlett Foundation, PI on Subcontract, 1/1/07–12/31/07, $43,350 subcontract.
38. *Materials for Innovative Design into Urban High Schools.* Snee-Reinhardt Foundation. PI, 9/1/06–8/31/07, $20,350.
39. *Center for e-Design: IT Enabled Infrastructure and Technology,* National Science Foundation, Co-PI with M. Lovell, 7/06–6/08, $160,000.
40. *Towards a Science of Innovative Design.* National Science Foundation, BCS-0638451. PI, 9/1/06–8/31/08, $160,000.
41. *Workshop on the Scientific Basis of Individual and Team Innovation and Discovery*. National Science Foundation. PI, 5/1/06, $35,696.
42. *Predictive Theories for Better Displays of Uncertainty in Complex Visual Problem Solving*. Office of Naval Research, N000140610053. PI, 10/1/05–12/30/07, $171,600.
43. *Bringing Innovative Design into Urban High Schools on a Sustainable Basis: The University of Pittsburgh Innovative Design RET Site*. National Science Foundation, EEC-0502035. Co-PI with M. Lovell, 4/1/05–3/31/08, $400,000.
44. *The Impact of a Technology-Scaffolded Peer Evaluation Writing System on Writing Skills and Course Content Knowledge*. A. W. Mellon Foundation. PI, 1/1/04–12/31/06, $350,000.
45. *ACT-R/S and the Role of Mental Transformations in Complex and Map-Mediated Navigation*. Office of Naval Research, N000140210113. PI, 10/1/03–9/30/06, $337,044.
46. *SCALE: Systemwide Change for All Learners and Educators.* National Science Foundation, EHR-0227016. Co-PI with L. Resnick, T. Millar, A. Porter, & K. Lesley, 01/01/03–12/31/07, $35,000,000.
47. *Complex Problem-Solving with Certain Representations of an Uncertain World*. Office of Naval Research, N000140310061. PI, 10/1/02–9/30/05, $237,718.
48. *Model-assisted reasoning in science: Effects of model-centered instruction on middle school students' modeling abilities.* National Science Foundation. Co-PI with K. Raghavan, 7/1/02–6/30/05, $1,021,343.
49. *Modeling distant psychological space in complex problem solving*. Office of Naval Research. PI, 6/1/00–8/31/03, $194,982.
50. *Learning leadership skills in distributed training scenarios: Diagnosing strategies in scenarios using Latent Semantic Analysis*. Army Research Institute. PI. 9/1/00–8/31/02, $179,099.
51. *The role of environmental awareness and private speech in adapting and controlling behavior in children with autism*. Autism Society of America Foundation. PI, Co-PI A. Winsler, 10/1/00–9/30/02, $50,000.
52. *CyberE: Cyber environment for organizational adaptability.* Lucite/National Security Agency, Co-PI with J. Foreman & D. Rine, 11/1/00–10/31/01, $138,916.
53. *Cross-cultural views of collaborative research*. Mitsubishi Bank Foundation. Co-PI with T. Okada & K. Crowley, 9/1/94–8/31/98, $54,000.

NATIONAL AND INTERNATIONAL PROFESSIONAL SERVICE

International Society for Design & Development in Education

Chair of the Journals Committee, 2023–present
Chair of the Executive Committee, 2011–14, 2021 – 2023
Chair of the Eddie Prize Committee, 2010–14
Chair of Membership Committee, 2014–20

National Academy of Engineering / National Research Council Committee Member

K-12 Engineering Education, 2007–09
K-12 Engineering Education Standards, 2008–10
Adaptability and Resilience to Change, 2017–18

Grant Reviewing Panel Member

NSF, IES, Deutsche Forschungsgemeinschaft, Swiss National Science Foundation, Leibniz Gemeinschaft

Editor-in-Chief

Educational Designer, 2024 – present

Editorial Board Member (current only)

Journal of Educational Psychology, 2008 – present
International Journal of STEM Education, 2013 – present
Instructional Science, 2020 – present
ETR&D, 2022 – 2024

Conference Organizer

International Society for Design and Development in Education, Boston, MA, Sept, 2011; Pittsburgh, PA, Sept, 2019; Virtual, March 2021
Computer-Supported Peer Review in Education: Synergies with Intelligent Tutoring Systems, Pittsburgh, PA, June, 2010
Workshop on Confidential Data Collection for Innovation Analysis in Organizations. Redmond, WA, September, 2009
Innovation and Discovery Workshop: The Scientific Basis of Individual and Team Innovation and Discovery. Ballston, VA, May 2006
The 4th and 6th International Conferences on Cognitive Modeling. Fairfax, VA, July, 2001; Pittsburgh, PA, July, 2004
The 24th Annual Meeting of the Cognitive Science Society. Fairfax, VA, August, 2002
Designing for Science. Pittsburgh, PA, April, 1998

TEACHING EXPERIENCE (last 10 years)

Graduate

Design of Educational Systems, 2015,16,18, 24
Problem-based Learning, 2016
Learning, 2020

Undergraduate

Cognitive Psychology, 2016,17,18,19,21,22
Equity in Learning @ Pitt, 2023, 24
Motivation, 2023

GRADUATE STUDENTS & POSTDOCS

Graduate student advisees

University faculty positions

Kwangsu Cho, Psy, PhD 2005 (Yonsei Univ., Korea)
Melissa Patchan, Psy, PhD 2011 (West Virginia Univ.)
Sam Abramovich, LSAP PhD 2013 (SUNY Buffalo)
Paul Egan, Engr PhD 2014 (Texas Tech)
Joel Chan, Psy, PhD 2014 (U of Maryland)
Anita Schuchardt, LSAP, PhD 2016 (U of Minnesota)
Paulette Vincent-Ruz, LSAP 2019 (New Mexico State)
Anna Premo, LSAP 2024 (UTH Zurich)

Industry and Non-profit R&D positions

Lelyn Saner, Psy, PhD 2008 (Booz Allen Hamilton)
Anthony Harrison, Psy, PhD 2008 (Naval Research Labs)
Xiaohui Kong, ISP, PhD 2009 (Stealth Mode)
Eli Silk, Cognitive Studies PhD 2011 (Consulting)
Jooyoung Jang, Psy PhD 2013 (Google)
Meghan Bathgate, Psy, PhD 2016 (Yale Univ.)
Ross Higashi, LSAP, PhD 2018 (CMU)
Allison Liu, Psy, PhD 2018 (Lexia Learning)
Eben Witherspoon, LSAP 2019 (AIR)

Current

Liwei Chen, Psy

Postdoc advisees

University faculty positions

Brad Morris 2001-2 (Kent State)
Xornam Apedoe 2005-8 (University of San Francisco)
Michelle Ellefson 2005-7 (Cambridge Univ., UK)
Jarrod Moss 2007-8 (Mississippi State)
Susannah Paletz, 2008-11 (Univ. of Maryland)
Adar Ben-Eliyahu 2011-12 (Univ. of Haifa, Israel)
Arava Kallai 2010-13 (Yezreel Valley College, Israel)
Kathy Malone, 2014 (Nazarbayev Univ., Kazakhstan)
Lisa Fazio, 2013-14 (Vanderbilt University)
Natalie Pareja Roblin 2013-17 (Univ. of Amsterdam)
Dana Miller-Cotto, 2017-19 (UC Berkeley)
Yong Wu (Beijing Univ. of Posts and Telecom., China)

Industry and Non-profit R&D positions

Laura Moin 2003-5 (Consulting)
Yaron Doppelt 2003-5 (Israeli Ministry of Education)
Matt Mehalik 2003-5 (Breathe Pittsburgh)
Alicia Chang 2008-10 (Google Education)
Charles Cox 2010-12 (Penn State)
Jordan Lippman 2011-13 (Collaboration Nation)
Amanda Crowell 2011-13 (Crowell Coaching)
Louis Alfieri, 2010-14 (Vertex Education)
Li Sha 2011-14 (Simon Frasier Univ., Canada)
Alok Baikadi, 2013-16 (ETS)
Miray Tekkumru Kisa, 2014-15 (RAND)
Yao Xiong, 2017-18 (Google)
Aaron Anthony, 2019-20 (Univ. of Pitt.)
Mallory Avery (Monash Univ., Australia)
Crystal Menzies (UC Berkeley)
JoeAnn Nguyen (Mathnasium)
Jessie Rubio (Framingham Public Schools)

Current

Maggie Walsh
Danielle Fox

Eric McChesney

Visiting Scholars

China

Weihong Shang (Beihang University)
Yan Zou (Beihang University)
Fuhui Zhang (Northeast Normal University)
Ying Gao (Northeast Normal University)
Chen Jiang (Northeast Normal University)
Yi Wang (Northeast Normal University)
Qiuying Yu (Northeast Normal University)
Xiaozhe Wu (Northeast Normal University)
Yunmin Zou (Jilin University)
Yanqinq Wang (Harbin Institute of Technology)
Zheng Zong (Harbin Institute of Technology)
Yi Zhang (Central China Normal University)
Qiuchen Yu (Central China Normal University)
Huifeng Mu (Jiaxing University)
Jing Yang (Dalian University of Foreign Languages)
Yuhan Zhao (Northeast Normal University)
Ning Miao (Changchun Normal University)
Yuhong Wu (Huzhou University)
Bing Xie (Northeast Normal University)

Denmark

Bo Christensen (University of Aarhus)

Germany

Ines Lammertz (RWTH Aachen)
Martin Greisel (University of Augsburg)

Mexico

Josemaría Elizondo (Tecnológico de Monterrey)

Netherlands

Xingshi Gao (Wageningen University)

S. Korea

Namseok Lee (Sungkyunkwan University)

Taiwan

Pei-Yi Lin (National ChengChi University)

Erdös — Luczak — Rahimi — Litman — Schunn

EDITED VOLUMES & PROCEEDINGS

Derry, S. J., Schunn, C. D., & Gernsbacher, M. A. (Eds.) (2005). *Interdisciplinary Collaboration: An Emerging Cognitive Science*. Mahwah, NJ: Erlbaum.

Schunn, C. D., Lovett, M. C., Munro, P., & Lebiere, C. (Eds.) (2004). *Proceedings of the 2004 Sixth International Conference on Cognitive Modeling*. Mahwah, NJ: Erlbaum.

Gray, W. D., & Schunn, C. D. (Eds.) (2002). *Proceedings of the 24th Annual Meeting of the Cognitive Science Society*. Mahwah, NJ: Erlbaum.

Altmann, E. M., Cleeremans, A., Schunn, C. D., & Gray, W. D. (Eds.) (2001). *Proceedings of the 2001 Fourth International Conference on Cognitive Modeling*. Mahwah, NJ: Erlbaum.

Crowley, K., Schunn, C.D., & Okada, T. (Eds.) (2001). *Designing for Science: Implications from Professional, Instructional, and Everyday Science*. Mahwah, NJ: Erlbaum.

SELECTED RECENT JOURNAL ARTICLES

Web-based Peer Interaction

Zhang, Y., Schunn, C. D., & Wu, Y. (2024). Interconnecting peer feedback literacies: Exploring the relationship between providing and acting on peer feedback. *Studies in Educational Evaluation*, 83, 101411. 0.1016/j.stueduc.2024.101411

Yu, Q. & Schunn, C. D. (2023). Understanding the what and when of peer feedback benefits for performance and transfer. *Computers in Human Behavior, 147,* 107857.

Wu, Y. & Schunn, C. D. (2023). Passive, active, and constructive engagement with peer feedback: A revised model of learning from peer feedback. *Contemporary Educational Psychology*, *73*, 102160.

Engagement and Learning

Walsh, M. E., & Schunn, C. D. (2026). Reconceptualizing framing theory for adaptive teaching expertise: the role of strategic and expansive framing. *Educational Psychologist*, *61*(1), 1-18. 10.1080/00461520.2025.2486107

McChesney, E., Schunn, C.D., DeAngelo, L., & McGreevy, E. (2025). Where to act, when to think, and how to feel: The ABC+ model of learning engagement and its relationship to the components of academic performance. *International Journal of STEM Education*, *12*, 31.

Chen, L., & Schunn, C.D. (2025). When student evaluation of teaching is no longer indicative: Psychology students' in-class experience, motivational factors and future choices. *Studies in Educational Evaluation, 86,* 101475.

STEM Learning

Menzies, C., Schunn, C. D., & Stein, M. K. (2024). Cultivating and leveraging the community cultural wealth of Black students in high cognitive demand elementary mathematics classrooms. *Teaching and Teacher Education, 149*, 104682.

Kiselyov, K.*,* & Schunn C. D. (2022). Storytelling as a tool to enhance conceptual understanding in cell biology. *Journal of Microbiology and Biology Education, 23*(2), e00308-21.

Walsh, M. E., Witherspoon, E., Schunn, C. D., & Matsumura, L. C. (2023). Mental simulations to facilitate teacher learning of ambitious mathematics instruction in coaching interactions. *International Journal of STEM Education, 10*(9).

Improvement Approaches to ELA and Mathematics Education

Premo, A. E., & Schunn, C. D. (2025). A networked improvement community focused upon student-centered reading practices in 13 schools in the US: Effects of higher implementation frequency on reading outcomes. *School Effectiveness and School Improvement*. https://doi.org/10.1080/09243453.2025.2574592

Nguyen, J., & Schunn, C.D. (2025). Humanizing pedagogies that support student-centered instruction with students of color: Perspectives from successful teachers. *Journal of Adolescent & Adult Literacy*, *68*(6), 584-593.

Premo, A. E., & Schunn, C. D. (2025). Network, school, and student demographic level effects of a networked improvement community on student reading outcomes. *Studies in Educational Evaluation, 85*, 101451.

Web-based Peer Interaction

Zhang, Y., Schunn, C. D., Chen, P. (In press). The power of praise: the central role of affective peer feedback in interest-based learning. *Assessment and Evaluation in Higher Education*.

Zhang, F., & Schunn, C. D. (In press). The interplay of student attitudes towards and engagement with peer feedback in an EFL context: A longitudinal case study. In I. Lee & Y. Shulin (Eds.), *Peer Feedback and Assessment in L2 Writing: Cognition and Engagement*. Routledge.

Banihashem, S. K., Noroozi, O., Khosravi, I., Schunn, C. D., & Drachsler, H. (In press). Pedagogical framework for hybrid intelligent feedback. *Innovations in Education and Teaching International*. 10.1080/14703297.2025.2499174

Gao, X., Schunn, C.D., Noroozi, O., Gulikers, J., Banihashem, S.K., & Biemans, H. (2025). Consistency in providing peer feedback: The role of individual and situational factors. *Assessment & Evaluation in Higher Education, 50*(8), 1173-1187. 10.1080/02602938.2025.2517617

Zhao, Y., Zhang, F., & Schunn, C. D. (2025). Predicting the changing relationships between students' self-concepts and task perceptions in peer feedback, *50*(8), 1223-1237. *Assessment & Evaluation in Higher Education.* 10.1080/02602938.2025.2512416.

Zong, Z., Schunn, C. D., *Zheng, M.,* & Gao, Y. (2025). Feedback familiarity explains why some students don't like peer review: Understanding why using a Stressor-Strain-Outcome framework. *Australasian Journal of Educational Technology, 41*(4). 10.14742/ajet.10414

Noroozi, O., Schunn, C., Schneider, B., & *Banihashem, S. K.* (2025). Advancing peer learning with learning analytics and artificial intelligence. *International Journal of Educational Technology in Higher Education*, 22, 62. 10.1186/s41239-025-00559-5

Noroozi, O., *Haddadian, G. Gao, X.,* Schunn, C., Alqassab, M., & *Banihashem, S.K.* (2025). The value of GenAI for peer feedback provision: Student perceptions and impacts. *International Journal of Educational Technology in Higher Education, 22*, 61. 10.1186/s41239-025-00558-6

Zhang, Y., Schunn, C. D., & Wu, Y. (2025). Overwhelmed receivers and overly ambitious providers: How the impacts of peer comment features look different at receiver and provider levels of aggregation. *Contemporary Educational Psychology, 82*, 102397. 10.1016/j.cedpsych.2025.102397

Yu, Q. & Schunn, C. D. (2025). Which experiences are consistently associated with other-regulation of peer feedback length? *Journal of Educational Psychology, 117*(6), 918–938. 10.1037/edu0000913

Zong, Z., & Schunn, C. D. (2025). What kind of matching groups makes students benefit more? The role of reviewer expertise and document quality within-groups. *Acta Psychologica*, *254*, 104825. 10.1016/j.actpsy.2025.104825

Mu, H., & Schunn, C. D. (2025). The good, bad, and ugly of comment prompts: Effects on length and helpfulness of peer feedback. *International Journal of Educational Technology in Higher Education, 22*, 4. 10.1186/s41239-025-00502-8

Zhang, Y., Schunn, C. D., & Wu, Y. (2024). Interconnecting peer feedback literacies: Exploring the relationship between providing and acting on peer feedback. *Studies in Educational Evaluation*, 83, 101411. 0.1016/j.stueduc.2024.101411

Cui, Y., & Schunn, C. D. (2024). Peer feedback that consistently supports learning to write and read: providing comments on meaning-level issues. *Assessment & Evaluation in Higher Education, 49*(8), 1168-1181. 10.1080/02602938.2024.2364025

Zhang, Y., Schunn, C. D., & Wu, Y. (2024). What does it mean to be good at peer reviewing?: A multidimensional scaling and cluster analysis study of behavioral indicators of peer feedback literacy. *International Journal of Educational Technology in Higher Education*, *21*, 26. 10.1186/s41239-024-00458-1

Zhao, Y., Zhang, F., Schunn, C. D., *He, P., Li, D., & Zhao, Y.* (2024). Feedback, feedback-on-feedback and re-feedback: Effects of written dialogic peer feedback on EFL writing. *Assessment & Evaluation in Higher Education, 49*(4), 523-538. 10.1080/02602938.2023.2278017

Kiselyov, K.*,* & Schunn, C. D. (2024). Peer-reviewed presentation exchange in an undergraduate classroom. *Journal of Microbiology and Biology Education,* e00067-23. 10.1128/jmbe.00067-23

Dong, Z., Gao, Y., & Schunn, C. D. (2023). Assessing students' peer feedback literacy in writing: Scale development and validation. *Assessment & Evaluation in Higher Education, 48*(8), 1103-1118. 10.1080/02602938.2023.2175781

Xiong, Y. Schunn, C. D., & Wu, Y. (2023). What predicts variation in reliability and validity of online peer assessment? A large-scale cross-context study. *Journal of Computer Assisted Learning, 39*(6), 2004-2024. 10.1111/jcal.12861

Zong, Z., Schunn, C. D., & Wang, Y. (2023). When do students provide more peer feedback? The roles of performance and prior feedback experiences. *Instructional Science, 51*, 977–1003. 10.1007/s11251-023-09640-w

Zong, Z., & Schunn, C. D. (2023). Does matching peers at finer-grained levels of prior performance enhance gains in task performance from peer review? *International Journal of Computer-Supported Collaborative Learning, 18,* 425–456. 10.1007/s11412-023-09401-4

Zhang, Y., & Schunn, C. D. (2023). Self-regulation of peer feedback quality aspects through different dimensions of experience within prior peer feedback assignments. *Contemporary Educational Psychology. 74,* 102210. 10.1016/j.cedpsych.2023.102210

Yu, Q. & Schunn, C. D. (2023). Understanding the what and when of peer feedback benefits for performance and transfer. *Computers in Human Behavior, 147,* 107857. 10.1016/j.chb.2023.107857

Zhang, F., Schunn, C., *Chen, S.*, *Li, W., & Li, R.* (2023). EFL student engagement with giving peer feedback in academic writing: A longitudinal study. *Journal of English for Academic Purposes*, *64*, 101255. 10.1016/j.jeap.2023.101255

Gao, Y., *An, Q.* & Schunn, C. D. (2023). The bilateral benefits of providing and receiving peer feedback in academic writing across varying L2 proficiency. *Studies in Educational Evaluation, 77*, 101252. 10.1016/j.stueduc.2023.101252

Wu, Y. & Schunn, C. D. (2023). Passive, active, and constructive engagement with peer feedback: A revised model of learning from peer feedback. *Contemporary Educational Psychology*, *73*, 102160. 10.1016/j.cedpsych.2023.102160

Wu, Y. & Schunn, C. D. (2023). Assessor writing performance on peer feedback: Exploring the relation between assessor writing performance, problem identification accuracy, and helpfulness of peer feedback. *Journal of Educational Psychology, 115*(1), 118–142. 10.1037/edu0000768

Tong, Y., Schunn, C. D., *Wang, H.* (2023). Why increasing the number of raters only helps sometimes: Reliability and validity of peer assessment across tasks of different complexity. *Studies in Educational Evaluation, 76*, 101233. *10.1016/j.stueduc.2022.101233*

Cui, Y., Schunn, C. D., & Gai, X. (2022). Peer feedback and teacher feedback: A comparative study of revision effectiveness in writing instruction for EFL learners. *Higher Education Research & Development, 41*(6), 1838-1854. 10.1080/07294360.2021.1969541

Zong, Z., Schunn, C. D., & Wang, Y. (2022). What makes students contribute more peer feedback? The role of within-course experience with peer feedback. *Assessment and Evaluation in Higher Education, 47*(6), 972-983. 10.1080/02602938.2021.1968792

Zong, Z., Schunn, C. D., & Wang, Y. (2022). Do experiences of interactional inequality predict lower depth of future student participation in peer review? *Computers in Human Behavior, 127*, 107056. 10.1016/j.chb.2021.107056

Cui, Y., Schunn, C. D., Gai, X., Jiang, Y., & Wang, Z. (2021). Effects of trained peer vs. teacher feedback on EFL students' writing performance, self-efficacy, and internalization of motivation. *Frontiers in Psychology, 12*, 6659 10.3389/fpsyg.2021.788474

Zong, Z., Schunn, C. D., & Wang, Y. (2021). Learning to improve the quality peer feedback through experience with peer feedback. *Assessment and Evaluation in Higher Education, 46*(6), 973-992. 10.1080/02602938.2020.1833179

Zong, Z., Schunn, C. D., & Wang, Y. (2021). What aspects of online peer feedback robustly predict growth in students' task performance? *Computers in Human Behavior*, *124*, 106924. 10.1016/j.chb.2021.106924

Zong, Z., Wang, Y. & Schunn, C. D. (2021). Why students want to provide feedback to their peers: Drivers of feedback quantity and variation by type of course. *Journal of Psychology in Africa, 31*(4), 336-343. 10.1080/14330237.2021.1952726

Wu, Y. & Schunn, C. D. (2021). From plans to actual implementation: A process model for why feedback features influence feedback implementation. *Instructional Science, 49*(3), 365–394. 10.1007/s11251-021-09546-5

Wu, Y. & Schunn, C. D. (2021). The effects of providing and receiving peer feedback on writing performance and learning of secondary school students. *American Educational Research Journal, 58*(3), 492-526. 10.3102/0002831220945266

Xiong, Y. & Schunn, C. D. (2021). Reviewer, Essay, and Reviewing Process Characteristics that Predict Errors in Web-based Peer Review. *Computers & Education, 166*, 104146. 10.1016/j.compedu.2021.104146

Zhang, F., Schunn, C. D., Li, W., & Long, M. (2020). Changes in the reliability and validity of peer assessment across the college years. *Assessment and Evaluation in Higher Education, 45*(8), 1073-1087. 10.1080/02602938.2020.1724260

Wu, Y. & Schunn, C. D. (2020). When peers agree, do students listen? The central role of feedback quality and feedback frequency in determining uptake of feedback. *Contemporary Educational Psychology*, *62*, 101897. 10.1016/j.cedpsych.2020.101897

Wu, Y. & Schunn, C. D. (2020). From feedback to revisions: Effects of feedback features and perceptions. *Contemporary Educational Psychology, 60,* 101826. 10.1016/j.cedpsych.2019.101826

Schunn, C. D., & *Wu, Y.* (2019). The learning science of multi-peer feedback for EFL students. *Technology Enhanced Foreign Language Education, 189*, 13-21.

Gao, Y., Wang, Y. & Schunn, C. D. (2019). Implementation of peer feedback and its potential mediators in English writing. *Technology Enhanced Foreign Language Education, 186*(2), 17-24.
Elizondo-Garcia, J., Schunn, C., & Gallardo, K. (2019). Quality of peer feedback in relation to instructional design: A comparative study in energy and sustainability MOOCs. *International Journal of Instruction, 12*(1), 1308-1470. 1694-609X
Gao, Y., Schunn. C.D., & *Yu, Q.* (2018). The alignment of written peer feedback with draft problems and its impact on revision in peer assessment. *Assessment and Evaluation in Higher Education, 44*(2), 294-308. 10.1080/02602938.2018.1499075
Patchan, M. M., Schunn, C.D., & Clark, R. J. (2018). Accountability in peer assessment: examining the effects of reviewing grades on peer ratings and peer feedback. *Studies in Higher Education, 43*(12), 2263-2278. 10.1080/03075079.2017.1320374
Gao, Y., Zhang, F., Zhang, S., & Schunn. C.D. (2018). Effects of receiving peer feedback in English writing: A study based on Peerceptiv. *Technology Enhanced Foreign Language Education, 180*(2), 3-9,67.
Zou, M., Schunn, C., Wang, Y., & Zhang, F. (2018). Student attitudes that predict participation in peer assessment. *Assessment and Evaluation in Higher Education*, 43(5), 800-811. 10.1080/02602938.2017.1409872
Mandala, M., Schunn, C. D., Dow, S., Goldberg, M., Perlman, J., Clark, W., & Mena, I. (2018). Collaborative team peer review generation improves feedback quality and reviewer engagement. *International Journal of Engineering Education, 34*(4), 1299-1313.
Cho, K., & Schunn, C. D. (2018). Finding an optimal balance between agreement and performance in an online reciprocal peer evaluation system. *Studies in Educational Evaluation, 56,* 94–101. 10.1016/j.stueduc.2017.12.001
Zhang, F., Schunn, C. D., & *Baikadi, A.* (2017). Charting the routes to revision: An interplay of writing goals, peer comments, and self-reflections from peer review. *Instructional Science, 45*(5), 679-707. 10.1007/s11251-017-9420-6
Patchan, M. M., Schunn, C. D., & Correnti, R. (2016). The nature of feedback: how feedback features affect students' implementation rate and quality of revisions. *Journal of Educational Psychology, 108*(8), 1098-1120. 10.1037/edu0000103
Patchan, M. M., & Schunn, C. D. (2016). Understanding the effects of receiving peer feedback for text revision: relations between author and reviewer ability. *Journal of Writing Research*, *8*(2), 227-265. 10.17239/jowr-2016.08.02.03
Schunn, C. D., Godley, A. J., & *DeMartino, S.* (2016). The reliability and validity of peer review of writing in high school AP English classes. *Journal of Adolescent & Adult Literacy*, *60*(1), 13–23. 10.1002/jaal.525
Schunn, C. D. (2016). Writing to learn and learning to write through SWoRD. In S.A. Crossley & D.S. McNamara (Eds.), *Adaptive Educational Technologies for Literacy Instruction*. NY: Taylor & Francis, Routledge.
Patchan, M. M., & Schunn, C. D. (2015). Understanding the benefits of providing peer feedback: How students respond to peers' texts of varying quality. *Instructional Science, 43*(5), 591-614. 10.1007/s11251-015-9353-x
Abramovich, S., Schunn, C. D., Correnti, R. J. (2013). The role of evaluative metadata in an online teacher resource exchange. *Educational Technology Research & Development, 61,* 863-883. 10.1007/s11423-013-9317-2
Patchan, M. M., Hawk, B. H., Stevens, C. A., & Schunn, C. D. (2013). The effects of skill diversity on commenting and revisions. *Instructional Science*, *41*(2), 381-405. 10.1007/s11251-012-9236-3
Goldin, I. M., Ashley, K. D., & Schunn, C. D. (2012). Redesigning educational peer review interactions using computer tools: An introduction. *Journal of Writing Research*, *4*(2), 111-119. 10.17239/jowr-2012.04.02.1
Abramovich, S., & Schunn, C. D. (2012). Studying teacher selection of resources in an ultra-large scale interactive system: Does metadata guide the way? *Computers & Education, 58*(1), 551-559. 10.1016/j.compedu.2011.09.001
Kaufman, J. H., & Schunn, C. D. (2011). Students' perceptions about peer assessment for writing: Their origin and impact on revision work. *Instructional Science*, *39*(3), 387-406. 10.1007/s11251-010-9133-6
Lee, C. J., & C. D. Schunn (2011). Social Biases and Solutions for Procedural Objectivity. *Hypatia, 26*(2), 352-373. 10.1111/j.1527-2001.2011.01178.x
Patchan, M. M., Schunn, C.D., & Clark, R. J. (2011). Writing in natural sciences: Understanding the effects of different types of reviewers on the writing process. *Journal of Writing Research*, *2*(3), 365-393. 10.17239/jowr-2011.02.03.4
Lee, C. J., & C. D. Schunn (2010). Philosophy Journal Practices and Opportunities for Bias. *American Philosophical Association Newsletter on Feminism and Philosophy, 10*(1), 5-10.
Cho, K., & Schunn, C. D. (2010). Developing writing skills through students giving instructional explanations. In M. K. Stein & L. Kucan (Eds.), *Instructional Explanations in the Disciplines: Talk, Texts and Technology,* p. 207-221. New York: Springer.
Nelson, M. M., & Schunn, C. D. (2009). The nature of feedback: How different types of peer feedback affect writing performance. *Instructional Science, 27*(4), 375-401. 10.1007/s11251-008-9053-x

Patchan, M. M., Charney, D., & Schunn, C. D. (2009). A validation study of students' end comments: Comparing comments by students, a writing instructor, and a content instructor. *Journal of Writing Research*, *1*(2), 124-152. 10.17239/jowr-2008.01.01.1

Cho, K., Chung, T. R., King, W. R., & Schunn, C. D. (2008). Peer-based computer-supported knowledge refinement: An empirical investigation. *Communications of the ACM, 51*(3), 83-88. 10.1145/1325555.1325571

Cho, K., & Schunn, C. D. (2007). Scaffolded writing and rewriting in the discipline: A web-based reciprocal peer review system. *Computers and Education*, *48*(3), 409-426. 10.1016/j.compedu.2005.02.004

Cho, K., Schunn, C. D., & Charney, D. (2006). Commenting on writing: Typology and perceived helpfulness of comments from novice peer reviewers and subject matter experts. *Written Communication*, *23*(3), 260-294. 10.1177/0741088306289261

Cho, K., Schunn, C. D., & *Wilson, R.* (2006). Validity and reliability of scaffolded peer assessment of writing from instructor and student perspectives. *Journal of Educational Psychology, 98*(4), 891-901. 10.1037/0022-0663.98.4.891

Engagement and Learning in Science, Technology, Art, Engineering, and Mathematics

M *Rubio, J. W.*, Schunn, C.D., Robles, B., & *Castleman, S. E.* (2026). Home language use in mathematics classrooms supports processing, not just input-output work. *Language & Education, 40*(1), 135-155. 10.1080/09500782.2025.2522827

M *Walsh, M. E.,* & Schunn, C. D. (2026). Reconceptualizing framing theory for adaptive teaching expertise: The role of strategic and expansive framing. *Educational Psychologist, 61*(1), 1-18. 10.1080/00461520.2025.2486107

SE *McChesney, E.*, Schunn, C.D., *Dorvé-Lewis, G.*, Godwin, A., & DeAngelo, L. (2025). Reconceptualizing learning engagement: Evidence for a context-sensitive structure in STEM Education. *Frontiers in Psychology*, 16, 1649744. 10.3389/fpsyg.2025.1649744

S *McChesney, E.*, Schunn, C.D., DeAngelo, L., & McGreevy, E. (2025). Where to act, when to think, and how to feel: The ABC+ model of learning engagement and its relationship to the components of academic performance. *International Journal of STEM Education*, *12*, 31. 10.1186/s40594-025-00555-1

S *Chen, L.,* & Schunn, C.D. (2025). When student evaluation of teaching is no longer indicative: Psychology students' in-class experience, motivational factors and future choices. *Studies in Educational Evaluation*, 86, 101475. 10.1016/j.stueduc.2025.101475

M *Walsh, M. E.*, Matsumura, L. C., Schunn, C.D. & Zook-Howell, D. (2025). Supporting experts to develop experts: Identifying critical components of mental simulations as a tool for teacher professional learning. *Frontiers in Education*, 10.3389/feduc.2025.1640545

E *Bahnson, M.,* Godwin, A., Schunn, C., *McChesney, E.*, & DeAngelo L. (2025). Retention in engineering pathways: An ecological belonging intervention supports help-seeking and continued enrollment. *International Journal of STEM Education, 12*, 6. 10.1186/s40594-025-00530-w

M *Rubio, J. W.*, Schunn, C.D., & *Castleman, S. E.* (2024). When my teacher speaks Spanish, my math classroom experience changes: Tracking attitudinal and achievement effects. *Language, Culture and Curriculum, 37*(3), 310-326. 10.1080/07908318.2024.2335951

S *Malespina, A.*, Schunn, C., & Singh, C. (2023). Bioscience students' internalized mindsets predict grades and reveal gender inequities in physics courses. *Physical Review Physics Education Research*, *19*, 020135. 10.1103/PhysRevPhysEducRes.19.020135

S Dorph, R., Cannady, M., & Schunn, C. D. (2022). What drives visitor engagement in exhibits? The interaction between visitor activation profiles and exhibit features. *Curator, 65*(2), 399-416. 10.1111/cura.12324

S *Malespina, A.*, Schunn, C., & Singh, C. (2022). Whose ability and growth matter: Gender, mindset and performance in physics. *International Journal of STEM Education*, *9*, 28. 10.1186/s40594-022-00342-2

S *Kalender, Z. Y.*, Marshman, E., Schunn, C., Nokes-Malach, T., & Singh, C. (2022). Framework for unpacking gendered mindsets in physics by students' gender. *Physical Review Physics Education Research, 18*, 010116.

S *Witherspoon, E.,* & Schunn, C. D. (2022). Sources of gender differences in competency beliefs and retention in an introductory pre-medical science course. *Journal of Research Science in Teaching, 59*(5), 695-719. 10.1002/tea.21741

S *Vincent-Ruz, P.,* & Schunn, C. D. (2021). Identity complexes and science identity in early secondary: Mono-topical or in combination with other topical identities. *Research in Science Education, 51*, 369-390. 10.1007/s11165-019-09882-0

S *Blatt, L.R.,* Schunn, C. D., Votruba-Drzal, E., & Rottman, B. M. (2020). Variation in which key motivational and academic resources relate to academic performance disparities across introductory college courses. *International Journal of STEM Education, 7*, 58. *10.1186/s40594-020-00253-0*

E *Whitcomb, K. M., Kalender, Z. Y.,* Nokes-Malach, T. J., Schunn, C. D., & Singh, C. (2020). Comparison of self-efficacy and performance of engineering undergraduate women and men. *International Journal of Engineering Education, 36*(6), 1996–2014.

T *Higashi, R. M.*, & Schunn, C. D. (2020). Perceived relevance of digital badges predicts longitudinal change in program engagement. *Journal of Educational Psychology, 12*(5), 1020–1041. 10.1037/edu0000401

S *Kalender, Z. Y., Marshman, E.,* Schunn, C., Nokes-Malach, T., & Singh, C. (2020). Damage caused by women's lower self-efficacy on physics learning. *Physical Review Physics Education Research, 16*(1), 010118. 10.1103/PhysRevPhysEducRes.16.010118

S *Bodnar, K.*, Hofkens, T. L., Wang, M.-T., & Schunn, C. D. (2020). Science identity predicts science career aspiration across gender and race, but especially for boys. *Journal of Gender, Science and Technology*, 12(1), 32-45.

S *Witherspoon, E.,* & Schunn, C. D. (2020). Locating and understanding the largest gender differences in pathways to science degrees. *Science Education, 104*(2), 144-163. 10.1002/sce.21557

S Kalender, Z. Y., Marshman, E., Nokes-Malach, T., Schunn, C. D., & Singh, C. (2020). Beliefs about competence: The story of self-efficacy, gender, and physics. In A. Murrell (Ed.), *Diversity across disciplines: Research on people, policy, process and paradigm*. Charlotte, NC: Information Age Publishing.

S *Kalender, Z. Y., Marshman, E.,* Schunn, C., Nokes-Malach, T., & Singh, C. (2019). Why female science, technology, engineering, and mathematics majors do not identify with physics: They do not think others see them that way. *Physical Review Physics Education Research*, *15*(2), 020148. 10.1103/PhysRevPhysEducRes.15.020148

S *Kalender, Z. Y., Marshman, E.,* Schunn, C., Nokes-Malach, T., & Singh, C. (2019). Gendered patterns in the construction of physics identity from motivational factors? *Physical Review Physics Education Research*, *15*(2), 020119. 10.1103/PhysRevPhysEducRes.15.020119

S *Bonnette, R.,* Schunn, C. D., & Crowley, K. (2019). Falling in love and staying in love with science: Ongoing informal science experiences support fascination for all children. *International Journal of Science Education*, *41*(12), 1626-1643. 10.1080/09500693.2019.1623431

S Witherspoon, E., Vincent-Ruz, P., & Schunn, C. D. (2019). When making the grade isn't enough: The gendered nature of pre-med science course attrition. *Educational Researcher, 48*(4), 193-204. 10.3102/0013189X19840331

S *Marshman, E., Kalender, Z. Y.,* Nokes-Malach, T., Schunn, C., & Singh, C. (2018). Female students with A's have similar physics self-efficacy as male students with C's in introductory courses: A cause for alarm? *Physical Review Physics Education Research*, 14, 020123. 10.1103/PhysRevPhysEducRes.14.020123

S *Vincent-Ruz, P.,* & Schunn, C. D. (2018). The nature of science identity and its role as driver of student choices. *International Journal of STEM Education, 5*, 48. 10.1186/s40594-018-0140-5

S *Liu, A. S.*, & Schunn, C. D. (2018). The effects of school-related and home-related optional science experiences on science attitudes and knowledge. *Journal of Educational Psychology, 110*(6), 798-810. 10.1037/edu0000251

S Dorph, R., *Bathgate, M.E.*, Schunn, C. D., & Cannady, M. (2018). When I grow up: The relationship of science learning activation to STEM career preference. *International Journal of Science Education, 40*(9), 1034-1057. 10.1080/09500693.2017.1360532

S *Vincent Ruz, P.*, Grabowski, J., & Schunn, C. (2018). The impact of early participation in undergraduate research experiences on multiple measures of pre-med path success. *SPUR: Scholarship and Practice of Undergraduate Research*, *1*(3), 13-18. 10.18833/spur/1/3/12

S *Vincent Ruz, P.*, Binning, K., Schunn, C. D., & Grabowski, J. (2018). The effect of math SAT on women's chemistry competency beliefs. *Chemistry Education Research and Practice, 1*, 342-351. 10.1039/C7RP00137A

S *Ben-Eliyahu, A.,* Moore, D., Dorph, R., & Schunn, C. D. (2018). Investigating the multidimensionality of engagement: Affective, behavioral, and cognitive engagement in science across multiple days, activities, and contexts. *Contemporary Educational Psychology, 53,* 87-105. 10.1016/j.cedpsych.2018.01.002

S *Marshman, E., Kalender, Z. Y.,* Schunn, C. D., Nokes-Malach, T., & Singh, C. (2018). A longitudinal analysis of underrepresented students' motivational characteristics in introductory physics courses. *Canadian Journal of Physics, 96*(4), 391-405. 10.1139/cjp-2017-0185

- Dorph, R. & Schunn, C.D. (2018). Activating Jewish learners: Positioning youth for persistent success in Jewish learning and living. In J. Levisohn and J. Kress (Eds.), *Advancing the Learning Agenda in Jewish Education.* Brighton, MA. Academic Studies Press.

T *Higashi, R. M.*, Schunn, C. D., & Flot, J. B. (2017). Different underlying motivations and abilities predict students' versus teachers' persistence in an online course. *Educational Technology Research and Development, 65*(6), 1471-1493. 10.1007/s11423-017-9528-z

S *Bathgate, M. E.*, & Schunn, C. D. (2017). The psychological characteristics of experiences that influence science motivation and content knowledge. *International Journal of Science Education, 17*, 2402-2432. 10.1080/09500693.2017.1386807

SA Akiva, T., Schunn, C., & Louw, M. (2017). What drives attendance at informal learning activities?: A study of two art programs. *Curator: The Museum Journal, 60*(3), 351-364. 10.1111/cura.12206

S *Vincent Ruz, P.,* & Schunn, C. D. (2017). The increasingly important role of science competency beliefs for science learning in girls. *Journal of Research in Science Teaching, 54(*6), 790–822. 10.1002/tea.21387

S *Bathgate, M. E.,* & Schunn, C. D. (2017). Factors that deepen or attenuate decline of science utility value during the middle school years. *Contemporary Educational Psychology*, *49*, 215–225. 10.1016/j.cedpsych.2017.02.005

S Dorph, R., Schunn, C. D., & Crowley, K. (2017). Crumpled molecules and edible plastic: science learning activation in out of school time. *Afterschool Matters*, *25*, 18-28.

All Akiva, T., *Kehoe, S.,* & Schunn, C. D. (2017). Are we ready for citywide learning? Examining the nature of within- and between-program pathways in a community-wide learning initiative. *Journal of Community Psychology, 45*(3), 413-425. 10.1002/jcop.21856

S *Lin, P.-Y.*, & Schunn, C. D. (2016). The dimensions and impact of informal science learning experiences on middle schoolers' attitudes and abilities in science. *International Journal of Science Education, 38*(17), 2551-2572. 10.1080/09500693.2016.1251631

S *Bathgate, M. E.*, & Schunn, C. D. (2016). Disentangling intensity from breadth of science interest: What predicts learning behaviors? *Instructional Science, 44*(5), 423-440. 10.1007/s11251-016-9382-0

S Dorph, R., Cannady, M., & Schunn, C. D. (2016). How science learning activation enables success for youth in science learning. *Electronic Journal of Science Education, 20*(8).

S *Sha, L.,* Schunn, C. D., *Bathgate, M., & Ben-Eliyahu, A.* (2016). Families support their children's success in science learning by influencing interest and self-efficacy. *Journal of Research in Science Teaching, 53*(3), 450–472. 10.1002/tea.21251

S *Sha, L.,* Schunn, C. D. & *Bathgate, M.* (2015). Measuring choice to participate in optional science learning experiences during early adolescence. *Journal of Research in Science Teaching, 52*(5), 686-709. 10.1002/tea.21210

S *Bathgate, M.,* Schunn, C. D., Correnti, R. J. (2014). Children's motivation towards science across contexts, manner-of-interaction, and topic. *Science Education, 98*(2), 189–215. 10.1002/sce.21095

M *Abramovich, S.,* Schunn, C. D., & Higashi, R. M. (2013). Are badges useful in education?: It depends upon the type of badge and learner expertise. *Educational Technology Research & Development, 61*(2), 217-232. 10.1007/s11423-013-9289-2

A *Bathgate, M.*, Schunn, C. D. (2013). Exploring and encouraging metacognitive awareness in novice music students. In M. Stakelum (Ed.), *Developing the Musician*, SEMPRE Studies in the Psychology of Music series. Ashgate.

A *Bathgate, M.*, Sims-Knight, J., & Schunn, C. D. (2012). Thoughts on thinking: Engaging novice music students in metacognition. *Applied Cognitive Psychology, 26*(3), 403-409. 10.1002/acp.1842

AI and Learning for Writing and STEM

W Cui, Y., Schunn, C. D., Liu, H., & Yu, X. (In press). A study on model differences and the moderating role of cue words in generative artificial intelligence feedback for English writing. *Foreign Language Journal*. 10.16263/j.cnki.23-1071/h.2026.01.014

W Cui, Y. & Schunn, C. D. (In press). A survey and study of AI literacy among university faculty and students based on English academic writing tasks. *Foreign Languages and Foreign Language Teaching*. 10.13458/j.cnki.flatt.005149

W *Xiong, W.,* Litman, D., & Schunn, C. D. (2012). Improving research on and instructional quality of peer feedback through natural language processing. *Journal of Writing Research*, *4*(2), 155-176. 10.17239/jowr-2012.04.02.3

Improvement Approaches to ELA and Mathematics Education

E *Premo, A. E.*, & Schunn, C. D. (in press). A networked improvement community focused upon student-centered reading practices in 13 schools in the US: Effects of higher implementation frequency on reading outcomes. *School Effectiveness and School Improvement*. 10.1080/09243453.2025.2574592

E Premo, A. E., Schunn, C. D. (2026). How we assessed NSI instructional changes & their implementation. In T. Petrosky, S. DeMartino, G. Nolly (Eds.), *A Literacy Network for School Improvement: How Teachers and Leaders Made It Work*. Rowman & Littlefield Publishers.

E *Nguyen, J.*, & Schunn, C.D. (2025). Humanizing pedagogies that support student-centered instruction with students of color: Perspectives from successful teachers. *Journal of Adolescent & Adult Literacy*, *68*(6), 584-593. 10.1002/jaal.1392

E *Larbi-Cherif, A., Premo, A. E.*, Schunn, C. D., Russell, J. L. (2025). Designing an instructionally-focused practical measurement system centered on equity. In P. LeMahieu & P. Cobb (Eds.), *Measuring to Improve: Practical Measurement to Support Continuous Improvement in Education*. Harvard Education Press.

E *Premo, A. E.*, & Schunn, C. D. (2025). Network, school, and student demographic level effects of a networked improvement community on student reading outcomes. *Studies in Educational Evaluation, 85*, 101451. 10.1016/j.stueduc.2025.101451

Menzies, C., & Schunn, C. D. (2024). Designing for equity at scale. *Educational Designer*

STEM Learning

M *Menzies, C.*, Schunn, C. D., & Stein, M. K. (2024). Cultivating and leveraging the community cultural wealth of Black students in high cognitive demand elementary mathematics classrooms. *Teaching and Teacher Education, 149*, 104682. 10.1016/j.tate.2024.104682

T *Huang, Y.,* Guerra, J., Schunn, C. D., & Brusilovsky, P. (2024). Why students cannot easily integrate component skills?: An investigation of the composition effect in programming. *ACM Transactions on Computing Education, 24*(3), Article 38, 1-37. 10.1145/3673239

S *Avery, M.*, Caldwell, J., Schunn, C. D., & Wolfe, K. (2024). Improving introductory economics course content and delivery improves outcomes for women. *Journal of Economic Education, 55*(3), 216-231. 10.1080/00220485.2024.2334041

T *Huang, Y.*, Brusilovsky, P., Guerra, J., Koedinger, K., & Schunn, C. D. (2023). Supporting skill integration in an intelligent tutoring system for code tracing. *Journal of Computer Assisted Learning, 39*(2), 477-500. 10.1111/jcal.12757

M *Walsh, M. E., Witherspoon, E.,* Schunn, C. D., & Matsumura, L. C. (2023). Mental simulations to facilitate teacher learning of ambitious mathematics instruction in coaching interactions. *International Journal of STEM Education, 10*(9). 10.1186/s40594-023-00401-2

S Fischer, C., *Witherspoon, E.*, *Nguyen, H., Feng, Y.*, Fiorini, S., *Vincent-Ruz, P*., Mead, C., Bork, W. Matz, R., & Schunn, C. (2023). Advanced Placement course credit and undergraduate student success in gateway science courses. *Journal of Research in Science Teaching, 60*(2), 304-329. 10.1002/tea.21799

S Kiselyov, K.*,* & Schunn C. D. (2022). Storytelling as a tool to enhance conceptual understanding in cell biology. *Journal of Microbiology and Biology Education, 23*(2), e00308-21.

S *Miller-Cotto, D.,* & Schunn C. D. (2022). Mind the gap: How a large-scale course re-design in economics reduced performance gaps. *The Journal of Experimental Education*, *90*(4), 783-796. 10.1080/00220973.2020.1805717

M *Witherspoon, E. B., Ferrer, N. B.,* Correnti, R., Stein, M. K., & Schunn, C. D. (2021). Coaching that supports teachers' learning to enact ambitious instruction. *Instructional Science, 49,* 877–898. 10.1007/s11251-021-09536-7

S Apedoe, X., S., Ellefson, M. R. & Schunn, C. D. (2021). Supporting conceptual change in chemistry through design-based learning: The heating/cooling system unit. In M. DeVries & I. Henze-Rietveld (Eds.), Design-Based Concept Learning in Science and Technology Education. Leiden, The Netherlands: Brill. doi: https://doi.org/10.1163/9789004450004_004

S *Liu, A. S.,* & Schunn, C. D. (2020). Predicting pathways to optional summer science experiences by socioeconomic status and the impact on science attitudes and skills. *International Journal of STEM Education, 7*, 49. 10.1186/s40594-020-00247-y

S Drayton, B., Bernstein, D., Schunn, C. D., & McKenney, S. E. (2020). Consequences of curricular adaptation strategies for implementation at scale. *Science Education, 104*(6), 983-1007. 10.1002/sce.21595

S *Vincent-Ruz, P.,* Meyer, T., Garrett-Roe, S. & Schunn, C. D. (2020). Short and long-term effects of POGIL in a large enrollment General Chemistry course. *Journal of Chemical Education*, *97*(5), 1228-1238. 10.1021/acs.jchemed.9b01052

T *Hosseini, R., Akhuseyinoglu, K.,* Brusilovsky, P., Malmi, L., Pollari-Malmi K., Schunn, C. D., & Sirkiä, T. (2020). Improving engagement in program construction examples for learning python programming. *International Journal of Artificial Intelligence in Education, 30* (2), 299-236. 10.1007/s40593-020-00197-0

E *Whitcomb, K. M., Kalender, Z. Y.,* Nokes-Malach, T. J., Schunn, C. D., & Singh, C. (2020). Laying a foundation for success in engineering coursework: A predictive curriculum model. *International Journal of Engineering Education, 36*(4), 1340–1355.

S Cannady, M. A., *Vincent-Ruz, P.,* Chung, J. M., & Schunn, C. D., (2019). Scientific sensemaking supports science content learning across disciplines and instructional contexts. *Contemporary Educational Psychology, 59*, 101802. 10.1016/j.cedpsych.2019.101802

S *Tekkumru-Kisa, M.*, Schunn, C. D., Stein, M. K., & Reynolds, B. (2019). Change in thinking demands for students across the phases of a science task: An exploratory study. *Research in Science Education, 49*(3), 859-883. 10.1007/s11165-017-9645-z

S *Tekkumru-Kisa, M.*, & Schunn, C. D. (2019). Integrating a space for teacher interaction into an educative curriculum: Design principles and teachers' use of the iPlan tool. *Technology, Pedagogy and Education, 28*(2), 133-155. 10.1080/1475939X.2019.1595707

M *Quintana, R.,* & Schunn, C. D. (2019). Who benefits from a foundational logic course? Effects on undergraduate course performance. *Journal of Research on Educational Effectiveness, 12*(2), 191-214. 10.1080/19345747.2018.1543372

T *Huang, X.,* Wang, Y., Schunn, C. D., Zou, Y., & *Ai, W*. (2019). Redesigning flipped classrooms: A learning model and its effects on student perceptions. *Higher Education, 78*, 711–728. 10.1007/s10734-019-00366-8

T *Witherspoon, E. &* Schunn, C. D. (2019). Teachers' goals predict computational thinking gains in robotics. *Information and Learning Science, 120*(5/6), 308-326. 10.1108/ILS-05-2018-0035

S *Betancur, L.,* Rottman, B. M., Votruba-Drzal, E., & Schunn, C. D. (2019). Analytical assessment of course sequencing: The case of methodological courses in psychology. *Journal of Educational Psychology, 111*(1), 91-103. 10.1037/edu0000269

All McKenney, S. E., & Schunn, C. D. (2018). How can educational research support practice at scale? Attending to educational designer needs. *British Educational Research Journal*, *44*(6), 1084-1100. 10.1002/berj.3480

T *Guerra, J.,* Schunn, C. D., *Bull, S., Barria-Pineda, J.,* & Brusilovsky, P. (2018). Navigation support in complex open learner models: Assessing visual design alternatives. *New Review of Hypermedia and Multimedia*, *3*, 160-192. 10.1080/13614568.2018.1482375

S *Betancur, L.,* Votruba-Drzal, E., & Schunn, C. D. (2018). Socioeconomic gaps in science achievement. *International Journal of STEM Education, 5*, 38. 10.1186/s40594-018-0132-5

S *Pareja Roblin, N.*, Schunn, C., Bernstein, D., & McKenney, S. (2018). Exploring shifts in the characteristics of US government-funded science curriculum materials and their (unintended) consequences. *Studies in Science Education, 54*(1), 1-39. 10.1080/03057267.2018.1441842

E *Mandala, M.,* Schunn, C. D., Dow, S., Goldberg, M., & Perlman, J. (2018). Uncovering the practices, challenges, and incentives for engineering design faculty. *International Journal of Engineering Education, 34*(4), 1314-1324.

S Schunn, C. D., Newcombe, N., Alfieri, L., Cromley, J., Massey, C., & Merlino, J. (2018). Using principles of cognitive science to improve science learning in middle school: What works when and for whom? *Applied Cognitive Psychology, 32*, 225-240. 10.1002/acp.3398

T *Witherspoon, E.*, *Higashi, R.,* Schunn, C. D., Shoop, R. (2018). Attending to structural programming features predicts differences in learning and motivation in a virtual robotics programming curriculum. *Journal of Computer Assisted Learning, 34*(2), 115-128. *10.1111/jcal.12219*

S *Pareja Roblin, N.*, Schunn, C., & McKenney, S. (2018). What are critical features of science curriculum materials that impact student and teacher outcomes? *Science Education, 102*(2), 260-282. 10.1002/sce.21328

ST *Malone, K. L.,* Schunn, C. D., & *Schuchardt, A.* (2018). Improving conceptual understanding and representation skills through Excel-based modeling. *Journal of Science Education and Technology*, *27*(1), 30-44. 10.1007/s10956-017-9706-0

E Menekse, M., *Higashi, R.,* Schunn, C., & Baehr, E. (2017). Exploring the role of robotics teams' collaboration quality on team performance in a robotics tournament. *Journal of Engineering Education*, *106*(4), 564-584. 10.1002/jee.20178

S *Barstow, B., Fazio, L., Lippman, J., Falakmasir, M.,* Schunn, C., Ashley, K. (2017). The impacts of domain-general vs. domain-specific diagramming tools on writing. *International Journal of Artificial Intelligence in Education, 27*(4), 671-693. 10.1007/s40593-016-0130-z

All Cannady, M., Moore, D., Votruba-Drzal, E., Greenwald, E., Stites, R. & Schunn, C. (2017). How personal, behavioral, and environmental factors predict working in STEMM vs non-STEMM Middle-Skill Careers. *International Journal of STEM Education, 4*(1): 22. 10.1186/s40594-017-0079-y

T *Witherspoon, B., Higashi, R. M.*, Schunn, C. D., Baehr, E. C., Shoop, R. (2017). Developing computational thinking through a virtual robotics programming curriculum. *ACM Transactions on Computing Education, 18*(1). 10.1145/3104982

SM *Schuchardt, A., Tekkumru-Kisa, M.,* Schunn, C. D., Stein, M. K., & Reynolds, B. (2017). How much professional development is needed with educative curriculum materials? It depends upon the intended student learning outcomes. *Science Education, 101*(6), 1015–1033. 10.1002/sce.21302

S *Barstow, B., Fazio, L.,* Schunn, C. D., & Ashley, K. (2017). Experimental evidence for diagramming benefits in science writing. *Instructional Science, 45*(5), 537-556. 10.1007/s11251-017-9415-3

M *Liu, A.S.,* & Schunn, C. D. (2017). Applying math onto mechanisms: mechanistic knowledge is associated with the use of formal mathematical strategies. *Cognitive Research: Principles and Implications, 2*(6). 10.1186/s41235-016-0044-1

All Schunn, C. D. (2017). Building from *in vivo* research to the future of research on relational thinking and learning. *Educational Psychology Review*, *29*(1), 97-104. 10.1007/s10648-016-9384-0

All Nye, B., Mitros, P., Schunn, C., Foltz, P., & Gašević D. (2017). *Why assess? The role of assessment in learning science & society*. In R. A. Sottilare, A. Graesser, X. Hu, & G. Goodwin (Eds.), Design Recommendations for Intelligent Tutoring Systems: Volume 5 - Domain Modeling. Orlando, FL: U.S. Army Research Laboratory.

T *Higashi, R.*, M., Schunn, C. D., Nguyen, V. H., & Ososky, S. J. (2017). Coordinating evidence across learning modules using digital badges. In R. A. Sottilare, A. Graesser, X. Hu, & G. Goodwin (Eds.), Design Recommendations for Intelligent Tutoring Systems: Volume 5 - Domain Modeling. Orlando, FL: U.S. Army Research Laboratory.

E *Cox, C.,* Apedoe, X., Silk, E., & Schunn, C. D. (2017). Analyzing materials in order to find design opportunities for the classroom. In S. Goldman & Z. Kabayadondo (Eds.), *Taking Design Thinking to School*, pp. 204-220. New York: Routledge.

T *Witherspoon, E. B.*, Schunn, C. D., *Higashi, R. M.*, & Baehr, E. C. (2016). Gender, interest and prior experience shape opportunities to learn programming in robotics competitions. *International Journal of STEM Education, 3*(18). 10.1186/s40594-016-0052-1

S Cromley, J. M., *Weisberg, S. M., Dai, T.*, Newcombe, N. S., Schunn, C. D., Massey, C., Merlino, F. J. (2016). Improving middle school science learning using diagrammatic reasoning. *Science Education, 100*(6), 1184-1213. 10.1002/sce.21241

SEM *Cox, C.,* Reynolds, B., *Schuchardt, A.,* & Schunn, C. D. (2016). Using mathematics and engineering to solve problems in secondary level biology. *Journal of STEM Education: Innovations and Research*, *17*(1), 22-30.

STM Iriti, J., Bickel, W., Schunn, C., & Stein, M. K. (2016). Maximizing research and development resources: Identifying and testing "load-bearing conditions" for educational technology innovations. *Educational Technology Research & Development, 64*, 245-262. 10.1007/s11423-015-9409-2

SM *Schuchardt, A.*, & Schunn, C. D. (2016). Modeling scientific processes with mathematics equations enhances student qualitative conceptual understanding and quantitative problem solving. *Science Education, 100*(2), 290–320. 10.1002/sce.21198

S *Crowell, A. J.,* & Schunn, C. D. (2016). Unpacking the relationship between science education and applied scientific literacy. *Research in Science Education, 46*(1), 129-140. 10.1007/s11165-015-9462-1

SM *Cox, C.,* Reynolds, B., *Schuchardt, A., &* Schunn, C. D., (2016). How do secondary level biology teachers make sense of using mathematics in design-based lessons about a biological process? In L. Annetta & J. Minogue (Eds.), *Connecting Science and Engineering Practices in Meaningful Ways (pp. 339-372).* Heidelberg: Springer.

S *Bathgate, M.E., Crowell, A.J.*, Cannady, M., Dorph, R. & Schunn, C.D. (2015). The learning benefits of being willing and able to engage in scientific argumentation. *International Journal of Science Education, 37*(10), 1590-1612. 10.1080/09500693.2015.1045958

S *Peffer, M. E.,* Beckler, M. L., Schunn, C. D., Renken, M., & Revak, A. (2015). Science classroom inquiry (SCI) simulations: A novel method to scaffold science learning. *PLOS ONE, 10*(3), e0120638. 10.1371/journal.pone.0120638

S *Tekkumru-Kisa, M.,* Stein, M. K., & Schunn, C. D. (2015). A framework for analyzing cognitive demand and content-practices integration: Task analysis guide in science. *Journal of Research in Science Teaching*, *52*(5), 659-685. 10.1002/tea.21208

M *Kessler, A.*, Stein, M. K., & Schunn, C. (2015). Cognitive demand of model tracing tutor tasks: Conceptualizing and predicting how deeply students engage. *Technology, Knowledge and Learning, 20*(3), 317-337. 10.1007/s10758-015-9248-6

M *Alfieri, L., Higashi, R.,* Shoop, R., & Schunn, C. D. (2015). Case studies of a robot-based game to shape interests and hone proportional reasoning skills. *International Journal of STEM Education, 2*:4. 10.1186/s40594-015-0017-9

S *Crowell, A. J.,* & Schunn, C. D. (2014). The context-specificity of scientifically literate action: Key barriers and facilitators across contexts and contents. *Public Understanding of Science*, *23*(6), 718-733. 10.1177/0963662512469780

All *Alfieri, L.,* Nokes-Malach, T. N., & Schunn, C. D. (2013). Learning through case comparisons: a meta-analytic review. *Educational Psychologist*, *48*(2), 87-113. 10.1080/00461520.2013.775712

T *Liu, A.,* Schunn, C. D., Flot, J., & Shoop, R. (2013). The role of physicality in rich programming environments. *Computer Science Education*, 23(4), 315-331. 10.1080/08993408.2013.847165

E *Apedoe, X.* & Schunn, C. D. (2013). Strategies for Success: Uncovering what makes students successful in design and learning. *Instructional science*, *41*(4), 773-791. 10.1007/s11251-012-9251-4

T *Liu, A.,* Newsome, J., Schunn, C. D., & Shoop, R. (2013). Kids learning to program in about half the time. *Tech Directions*, *March*, 16-19.

SE *Apedoe, X.*, *Ellefson, M. E.,* & Schunn, C. D. (2012). Learning together while designing: Does group size make a difference? *Journal of Science Education and Technology*, *21*(1), 83-94. 10.1007/s10956-011-9284-5

T Flot, J., Schunn, C., *Lui, A.,* Shoop, R. (2012). Learning how to program via robot simulation. *Robot Magazine*, *37*, 68-70.

SE Schunn, C. D., *Silk, E. M., & Apedoe, X. S.* (2012). Engineering in and for science education. In S. M. Carver and J. Shrager (Eds.), *The journey from child to scientist: Integrating cognitive development and the education sciences*. Washington, DC: APA Press.

E Schunn, C.D., & *Silk, E. M.* (2011). Learning theories for engineering technology and engineering education. In M. Barak and M. Hacker (Eds.), *Fostering Human Development through Engineering and Technology Education* (p. 3–18). Sense Publishers.

S Singh, C., Moin, L., & Schunn, C. D. (2010). Introduction to physics teaching for science and engineering undergraduates. *Journal of Physics Teacher Education Online, 5*(3), 3-10.

S Singh, C., & Schunn, C. D. (2009). Connecting three pivotal concepts in K-12 science state standards and maps of conceptual growth to research in physics education. *Journal of Physics Teacher Education Online, 5*(2), 16-28.

SE *Doppelt, Y.*, Schunn, C. D., *Silk, E. M., Mehalik, M.,* Reynolds, B., & Ward, E. (2009). Evaluating the impact of a facilitated learning community approach to professional development on teacher practice and student achievement. *Research in Science & Technological Education*, *27*(3), 339-354. 10.1080/02635140903166026

E Reynolds, B., *Mehalik, M. M.*, Lovell, M. R., & Schunn, C. D. (2009). Increasing student awareness of and interest in engineering as a career option through design-based learning. *International Journal of Engineering Education. 25*(1), 788-798.

SE *Silk, E. M.*, Schunn, C. D., & *Strand-Cary, M.* (2009). The impact of an engineering design curriculum on science reasoning in an urban setting. *Journal of Science Education and Technology*, *18*(3), 209-223. 10.1007/s10956-009-9144-8

T *Steinberg, D.*, *Patchan, M.*, Schunn, C. D., Landis, A. (2009). Determining adequate information for green building occupant training materials. *Journal of Green Building, 4*(3), 143-150. 2-s2.0-77953354391

T *Steinberg, D., Patchan, M.*, Schunn, C. D., Landis, A. (2009). Developing a focus for green building occupant training materials. *Journal of Green Building*, *4*(2), 175–184. 10.3992/jgb.4.2.175

E Schunn, C. D. (2009). How kids learn engineering: The cognitive science perspective. *The Bridge*, 39(3), 32-37.

TM *Silk, E. M.*, Schunn, C. D., & Shoop, R. (2009). Synchronized robot dancing: Motivating efficiency and meaning in problem solving with robotics. *Robot Magazine, 17*, 42-45.

TM *Silk, E. M.*, Higashi, R., Shoop, R., Schunn, C. D. (2010). Designing technology activities that teach mathematics. *The Technology Teacher, 69*(4), 21-27.

SE *Apedoe, X.*, Reynolds, B., *Ellefson, M. R.*, & Schunn, C. D. (2008). Bringing engineering design into high school science classrooms: The heating/cooling unit. *Journal of Science Education and Technology*, *17*(5), 454–465. 10.1007/s10956-008-9114-6

SE *Doppelt, Y.* & Schunn, C. D. (2008). Identifying students' perceptions of the important classroom features affecting learning aspects of a design based learning environment? *Learning Environments Research*, 11(3), 195-209. 10.1007/s10984-008-9047-2

SE *Doppelt, Y., Mehalik, M. M.,* Schunn, C. D., & Krysinski, D. (2008). Engagement and achievements in design-based learning. *Journal of Technology Education*, *19*(2), 22-39. 10.21061/jte.v10i2.a.2

SE *Ellefson, M.*, Brinker, R., Vernacchio, V., & Schunn, C. D. (2008). Design-based learning for biology: Genetic engineering experience improves understanding of gene expression. *Biochemistry and Molecular Biology Education*, *36*, 292-298. 10.1002/bmb.20203

SE *Mehalik, M. M., Doppelt, Y.*, & Schunn, C. D. (2008). Middle-school science through design-based learning versus scripted inquiry: Better overall science concept learning and equity gap reduction. *Journal of Engineering Education*, *97*(1), 71-85. 10.1002/j.2168-9830.2008.tb00955.x

S Schunn, C. D. (2008). Engineering educational design. *Educational Designer*, 1. http://www.educationaldesigner.org/ed/volume1/issue1/article2/index.htm

S *Moin, L.*, Dorfield, J., & Schunn, C. D. (2005). Where can we find future K-12 science & math teachers? A search by academic year, discipline, and achievement level. *Science Education*, *89*(6), 980-1006. 10.1002/sce.20088

S Crowley, K., Schunn, C. D., & Okada, T. (2001). An introduction to Designing for Science. In K. Crowley, C.D. Schunn, & T. Okada (Eds.), *Designing for Science: Implications from Professional, Instructional, and Everyday Science*. Mahwah, NJ: Erlbaum.

S Schunn, C. D., & Anderson, J. R. (2001). Science education in universities: Explorations of what, when, and how. In K. Crowley, C.D. Schunn, & T. Okada (Eds.), *Designing for Science: Implications from Professional, Instructional, and Everyday Science*. Mahwah, NJ: Erlbaum.

STEM Reasoning

S Schunn, C. D., Saner, L. D., & Paletz, S. B. F. (2024). Analyzing changing patterns of external reference use from informal lab group presentations to formal colloquia. In L. J Ball & F. Vallée-Tourangeau (Eds.), *The Routledge international handbook of creative cognition* (pp. 271-283). New York, NY: Routledge. 10.4324/9781003009351-19

E Chan, J., & Schunn, C. D. (2023). The importance of separating appropriateness into impact and feasibility for the psychology of creativity. *Creativity Research Journal, 35*(4), 629–644. 10.1080/10400419.2023.2191919

SE Paletz, S. B. F., & Schunn, C. D. (2018). Micro-conflict coding scheme. In E. Brauner, M Boos, & M. Kolbe (Eds.), Cambridge Handbook of Group Interaction Analysis. Cambridge University Press, Cambridge.

S Aviña, G. E., Schunn, C. D., Silva, A. R., Bauer, T. L., Crabtree, G. W., Johnson, C. M., Odumosu, T., Picraux, S. T., Sawyer, R. K., Schneider, R. P., Sun, R., Feist, G. J., Narayanamurti, V., & Tsao J. Y. (2018). The art of research: A divergent/ convergent thinking framework and opportunities for science-based approaches. In E. Subrahmanian, T. Odumosu. & J. Y. Tsao (Eds.), Engineering a Better Future: Interplay between Engineering, Social Sciences and Innovation. Springer. 10.1007/978-3-319-91134-2_14

E Goncher, A., *Chan, J.,* & Schunn, C. D. (2017). Measuring design innovation for project-based design assessment: considerations of robustness and efficiency. *Bitacora Urbano Territorial, 27*(4), 19-30. 10.15446/bitacora.v27n4Esp.68959

E *Egan, P.,* Moore, J., Ehrlicher, A., Weitz, D., Schunn, C., Cagan, J., & LeDuc, P. (2017). Robust mechanobiological behavior emerges in heterogenous myosin systems. *Proceedings of the National Academy of Sciences, 114*(39), E8147–E8154. 10.1073/pnas.1713219114

E Paletz, S., *Chan, J.*, & Schunn, C. D. (2017). Dynamics of micro-conflicts and uncertainty in successful and unsuccessful design teams. *Design Studies*, *50*, 39-69. 10.1016/j.destud.2017.02.002

E *Chan, J.*, & Schunn, C. D. (2017). A computational linguistic approach to modelling the dynamics of design processes. In B. T. Christensen & S. J. J. Abildgaard (Eds.), *Analysing design thinking: Studies of cross-cultural co-creation* (DTRS-11). Taylor & Francis/Belkema-CRC Press.

E *Egan, P.*, Chiu, F., Cagan, J., Schunn, C., LeDuc, P., Moore, J. (2016). The D3 design methodology: Bridging science and design for bio-based product development. *Journal of Mechanical Design, 138*, 081101-1-13. 10.1115/1.4033751

S Paletz, S., *Chan, J.*, & Schunn, C. D. (2016). Uncovering uncertainty through disagreement. *Applied Cognitive Psychology, 30*(3), 387-400. 10.1002/acp.3213

E *Fu, K.*, & Schunn, C. D. (2016). Open innovation through strategic design-by-analogy. In A. Markman & H. Naquin (Eds.), *Open Innovation: Academic and Practical Perspectives on the Journey from Idea to Market*. Oxford University Press.

E *Egan, P.*, Schunn, C., Cagan, J., & LeDuc, P. (2015). Improving understanding and design proficiency of complex multi-level biosystems through animation and parametric relationships support. *Design Science*, 1(1), e3. doi:10.1017/dsj.2015.3

E *Chan, J.*, & Schunn, C. D. (2015). The importance of iteration in creative conceptual combination. *Cognition*, *145*, 104–115. 10.1016/j.cognition.2015.08.008

E *Egan, P.*, Schunn, C. D., Cagan, J., & LeDuc, P. (2015). Emergent systems energy laws for predicting myosin ensemble processivity. *PLOS Computational Biology 11*(4): e1004177. 10.1371/journal.pcbi.1004177

E *Egan, P.*, Cagan, J., Schunn, C. D., & LeDuc, P. (2015). Synergistic human-agent methods for deriving effective search strategies: The case of nanoscale design. *Research In Engineering Design, 26*(2), 145-169. 10.1007/s00163-015-0190-3

E *Chan, J.*, Dow, S. P., & Schunn, C. D. (2015). Do the best design ideas (really) come from conceptually distant sources of inspiration? *Design Studies, 36*, 31-58. 10.1016/j.destud.2014.08.001

E *Chan, J.,* & Schunn, C. D. (2015). The impact of analogies on creative concept generation: Lessons from an in vivo study in engineering design. *Cognitive Science*, *39*(1), 126-155. 10.1111/cogs.12127

E *Fu, K., Chan, J.,* Schunn, C. D., & Cagan, J. (2013). Expert representation of design repository space: A comparison to and validation of algorithmic output. *Design Studies*, *34*(6), 729-762. 10.1016/j.destud.2013.06.002

S *Paletz, S. B. F.*, Kim, K., Schunn, C. D., Tollinger, I., & Vera, A. (2013). The development of adaptive expertise, routine expertise, and novelty in a large research team. *Applied Cognitive Psychology*, *27*(4), 415–428. 10.1002/acp.2928

E *Egan, P. F.,* Cagan, J. C., Schunn, C. D., & LeDuc, P. R. (2013). Design of complex biologically-based nanoscale systems using multi-agent simulations and structure-behavior-function representations. *Journal of Mechanical Design*, *135*(6), 061005. 10.1115/1.4024227

E *Fu, K., Chan, J.,* Cagan, J., Kotovsky, K., Schunn, C., & Wood, K. (2013). The meaning of "near" and "far": The impact of structuring design databases and the effect of distance of analogy on design output. *Journal of Mechanical Design*, *135*(2), 021007. 10.1115/1.4023158

S *Paletz, S. B. F.,* Schunn, C. D., & Kim, K. (2013). The interplay of conflict and analogy in multidisciplinary teams. *Cognition*, *126*(1), 1-19. 10.1016/j.cognition.2012.07.020

S *Chan, J., Paletz, S.,* & Schunn, C. D. (2012). Analogy as a strategy for supporting complex problem solving under uncertainty. *Memory & Cognition, 40*, 1352-1365. 10.3758/s13421-012-0227-z

E *Jang, J.,* & Schunn, C. D. (2012). Physical design tools support and hinder innovative engineering design. *Journal of Mechanical Design*, *134*(4), 041001. 10.1115/1.4005651

S Schunn, C. D. & Trafton, J. G. (2012). The psychology of uncertainty in scientific data analysis. In G. Feist & M. Gorman (Eds.), *Handbook in the Psychology of Science*. New York: Springer.

S *Paletz, S. B. F.* & Schunn, C. D. (2012). Digging into implicit/explicit states and processes: The case of cognitive/social process interaction in scientific groups. In R. Proctor and J. Capaldi (Eds.), *Psychology of Science: Implicit and Explicit Processes*. Oxford University Press.

S *Paletz, S. B. F.*, Schunn, C. D., & Kim, K. (2011). Intragroup conflict under the microscope: micro-conflicts in naturalistic team discussions. *Negotiation and Conflict Management Research*, *4*, 314-351. 10.1111/j.1750-4716.2011.00085.x

E *Chan, J., Fu, K.,* Schunn, C. D., Cagan, J., Wood, K., & Kotovsky, K. (2011). On the benefits and pitfalls of analogies for innovative design: Ideation performance based on analogical distance, commonness, and modality of examples. *Journal of Mechanical Design*, *133*, 081004-1-11. 10.1115/1.4004396

S *Paletz, S. B. F.,* & Schunn, C. D. (2011). Assessing group level participation in fluid teams: Testing a new metric. *Behavior Research Methods, 43*(2), 522–536. 10.3758/s13428-011-0070-3.

E *Linsey, J., Tseng, I., Fu, K.,* Cagan, J., Wood, K., & Schunn, C. D. (2010). A study of design fixation, its mitigation and perception in engineering design faculty. *Journal of Mechanical Design, 132*(4), 041003-1-12. 10.1115/1.4001110

S *Paletz, S. B. F.,* & Schunn, C. (2010). A social-cognitive framework of multidisciplinary team innovation. *Topics in Cognitive Science*, 2, 73-95. 10.1111/j.1756-8765.2009.01029.x

SE Schunn, C. D. (2010). From uncertainly exact to certainly vague: Epistemic uncertainty and approximation in science and engineering problem solving. In B. Ross (Ed.), *Psychology of Learning and Motivation (Vol. 53)*, p. 227-252. Burlington: Academic Press.

E *Christensen, B. T.*, & Schunn, C. D. (2009). The role and impact of mental simulation in design. *Applied Cognitive Psychology*, 23, 327-344. 10.1002/acp.1464

S *Trickett, S. B.*, Trafton, J. G., & Schunn, C. D. (2009). How do scientists respond to anomalies? Different strategies used in basic and applied science. *Topics in Cognitive Science, 1*(4), 711-729. 10.1111/j.1756-8765.2009.01036.x

E *Christensen, B. T.,* & Schunn, C. D. (2009). Setting a limit to randomness [or: 'Putting blinkers on a blind man']: Providing cognitive support for creative processes with environmental cues. In K. Wood & A. Markman (Eds.), *Tools for Innovation*. Oxford University Press.

E *Christensen, B. T.*, & Schunn, C. D. (2007). The relationship of analogical distance to analogical function and pre-inventive structure: The case of engineering design. *Memory & Cognition, 35*(1), 29-38. 10.3758/BF03195939

S Schunn, C. D., *Saner, L. D.,* Kirschenbaum, S. K., Trafton, J. G., & Littleton, E. B. (2007). Complex visual data analysis, uncertainty, and representation. In M. C. Lovett & P. Shah (Eds.), *Thinking with Data*. Mahwah, NJ: Erlbaum.

S *Trickett, S. B.,* Trafton, J. G., & *Saner, L. D.,* & Schunn, C. D. (2007). "I don't know what is going on there": The use of spatial transformations to deal with and resolve uncertainty in complex visualizations. In M. C. Lovett & P. Shah (Eds.), *Thinking with Data*. Mahwah, NJ: Erlbaum.

E *Mehalik, M. M.*, & Schunn, C. D. (2006). What constitutes good design? A review of empirical studies of the design process. *International Journal of Engineering Education*, *22*(3), 519-532.

SE Trafton, J. G., *Trickett, S. B.*, *Stitzlein, C. A.*, *Saner, L. D.*, Schunn, C. D., & Kirschenbaum, S. S. (2006). The relationship between spatial transformations and iconic gestures. *Spatial Cognition & Computation, 6*(1), 1-29. 10.1207/s15427633scc0601_1

S Schunn, C. D., Crowley, K., & Okada, T. (2005). Cognitive Science: Interdisciplinarity now and then. In S. J. Derry, C. D. Schunn, & M. A. Gernsbacher (Eds.), *Interdisciplinary Collaboration: An Emerging Cognitive Science* (pp. 287–315). Mahwah, NJ: Erlbaum.

S *Trickett, S. B.,* Trafton, J. G., & Schunn, C. D. (2005). Puzzles and peculiarities: How scientists attend to and process anomalies during data analysis. In M. E. Gorman, R. D. Tweney, D. Gooding, & A. Kincannon (Eds.), *Scientific and technological thinking* (pp. 97-118). Mahwah, NJ: LEA.

S Schunn, C. D., Crowley, K., & Okada, T. (2002). What makes collaborations across a distance succeed?: The case of the cognitive science community. In P. Hinds & S. Kiesler, *Distributed work*. Cambridge, MA: MIT Press.

S Schunn, C. D., Crowley, K., & Okada, T. (2000). Cognitive Science: Interdisciplinarity now and then. In K. Ueda & T. Okada (Eds.), *In search of collaborative cognition: Cognitive science on creative collaboration*. Tokyo: Kyoritsu Shuppan. (In Japanese)

S Schunn, C. D., & Klahr, D. (2000). Discovery processes in a more complex task. In D. Klahr (Ed.), *Exploring science: The cognition and development of discovery processes* (pp. 161-199). Cambridge, MA: MIT Press.
S Schunn, C. D., & Anderson, J. R. (1999). The generality/specificity of expertise in scientific reasoning. *Cognitive Science*, *23*(3), 337-370. 10.1207/s15516709cog2303_3
S Schunn, C. D., Crowley, K., & Okada, T. (1998). The growth of multidisciplinarity in the Cognitive Science Society. *Cognitive Science*, *22*(1), 107-130. 10.1207/s15516709cog2201_4
S Schunn, C. D., & Anderson, J. R. (1998). Scientific Discovery. In J. R. Anderson & C. Lebière (Eds.), *Atomic Components of Thought* (pp. 385-427). Mahwah, NJ: Erlbaum.
S Schunn, C. D., & Dunbar, K. (1996). Priming, analogy, and awareness in complex reasoning. *Memory & Cognition*, *24*(3), 271-284. 10.3758/BF03213292

Neuroscience of Complex Learning in Science and Mathematics

M *Liu, R.,* Schunn, C. D., Fiez, J., A., & Libertus, M. E. (2018). The integration between non-symbolic and symbolic numbers: Evidence from an EEG study. *Brain & Behavior, 8*(4), e00938. 10.1002/brb3.938

S *Wong, A.*, Moss, J., & Schunn, C. D. (2016). Tracking reading strategy utilization through pupillometry. *Australasian Journal of Educational Technology, 32*(6). 10.14742/ajet.3096

S Moss, J., & Schunn, C. D. (2015). Comprehension through explanation as the interaction of the brain's coherence and cognitive control networks. *Frontiers in Human Neuroscience*, *9*(562). 10.3389/fnhum.2015.00562

M *Liu, A. S., Kallai, A. Y.,* Schunn, C. D., & Fiez, J. (2015). Using mental computation training to improve complex mathematical performance. *Instructional Science, 43*(4), 463-485. 10.1007/s11251-015-9350-0

- *Richey, J. E., Phillips, J. S.*, Schunn, C. D., & Schneider, W. (2014). Is the link from working memory to analogy causal? No analogy improvements following working memory training gains. *PLOS One, 9*(9), e106616. 10.1371/journal.pone.0106616

S Moss, J., Schunn, C.D., Schneider, W., McNamara, D. S. (2013). The nature of mind wandering during reading varies with the cognitive control demands of the reading strategy. *Brain Research, 1539*, 48-60. 10.1016/j.brainres.2013.09.047

- *Verstynen, T., Phillps, J., Braun, E., Workman, B.,* Schunn, C. D., & Schneider, W. (2012). Dynamic sensorimotor planning during long-term sequence learning: the role of variability, response chunking and planning errors. *PLoS ONE*, *7*(10), e47336. 10.1371/journal.pone.0047336

M *Kallai, A. Y.,* Schunn, C. D., & Fiez, J. A. (2012). Mental arithmetic activates analogic representations of internally generated sums. *Neuropsychologia*, *50*(10), 2397-2407. 10.1016/j.neuropsychologia.2012.06.009

S *Moss, J.,* Schunn C.D., Schneider, W., McNamara, D. S., & VanLehn, K. (2011). The neural correlates of strategic reading comprehension: cognitive control and discourse comprehension. *NeuroImage*, *58*(2), 675-686. 10.1016/j.neuroimage.2011.06.034

Human Computer Interaction & Learning

Baikadi, A., Demmans Epp, C., & Schunn, C. D. (2018). Participating by activity or by week in MOOCs. *Information and Learning Science, 119*(9/10), 572-585. 10.1108/ILS-04-2018-0033

Patchan, M. M., Schunn, C. D., Sieg, W., & *McLaughlin, D.* (2016). The effect of blended instruction on accelerated learning. *Technology, Pedagogy and Education, 25*(3), 269-286. 10.1080/1475939X.2015.1013977

Jang, J., & Schunn, C. D. (2014). A framework for unpacking cognitive benefits of distributed complex visual displays. *Journal of Experimental Psychology: Applied*, 20(3), 260-269. 10.1037/xap0000022

Kirschenbaum, S. S., Trafton, J. G., Schunn, C. D., & Trickett, S. B. (2014). Visualizing uncertainty: The impact on performance. *Human Factors*, 56(3), 509-520. 10.1177/0018720813498093

Jang, J., Trickett, S. B., Schunn, C. D., & Trafton, J. G. (2012). Unpacking the temporal advantage of distributing complex visual displays. *International Journal of Human-Computer Studies*, *70*, 812-827. 10.1016/j.ijhcs.2012.07.003

Jang, J., & Schunn, C. D. (2012). Performance benefits of spatially distributed vs. stacked information on integration tasks. *Applied Cognitive Psychology*, *26*(2), 207–214. 10.1002/acp.1811

Jang, J., Schunn, C.D., & Nokes, T. J. (2011). Spatially distributed instructions improve learning outcomes and efficiency. *Journal of Educational Psychology*, *103*(1), 60-72. 10.1037/a0021994

Kong, X., Schunn, C. D., Wallstrom, G. L. (2010). High regularities in eye-movement patterns reveal the dynamics of visual working memory allocation mechanism. *Cognitive Science*, *34*(2), 322-337. 10.1111/j.1551-6709.2009.01075.x

Kong, X., & Schunn, C. D. (2007). Global vs. local information processing in visual/spatial problem solving: The case of traveling salesman problem. *Cognitive Systems Research*, *8*(3), 192-207. 10.1016/j.cogsys.2007.06.002

Duric, Z., Gray, W., *Heishman, R., Li, F., Rosenfeld, A.*, Schoelles, M. J., Schunn, C., & Wechsler, H. (2002). Integrating perceptual and cognitive modeling for adaptive and intelligent human-computer interaction. *Proceedings of the IEEE, 90*(7), 1272-1289. 10.1109/JPROC.2002.801449

Strategy Use & Learning

Winsler, A., *Abar, B.*, *Feder, M.*, *Rubio, D.A.*, & Schunn, C. D. (2007). Private speech and executive functioning among high functioning children with autistic spectrum disorders. *Journal of Autism and Developmental Disabilities*, *37*(9), 1617-1635. 10.1007/s10803-006-0294-8

Hansberger, J. T., Schunn, C. D., & Holt, R. W. (2006). Strategy variability: How too much of a good thing can hurt performance. *Memory & Cognition*, *34*(8), 1652-1666. 10.3758/BF03195928

Schunn, C. D., *McGregor, M.*, *Saner, L. D.* (2005). Expertise in ill-defined problem solving domains as effective strategy use. *Memory & Cognition, 33*(8), 1377-1387. 10.3758/BF03193370

Morris, B. J., & Schunn, C. D. (2004). Rethinking logical reasoning skills from a strategy perspective. In M. J. Roberts & E. Newton (Eds.), *Methods of thought: Individual differences in reasoning strategies*. Psychology Press.

Schunn, C. D. (2002). Why motivation only sometimes affects base-rate sensitivity: The mediating role of representations on adaptive performance. In Serge P. Shohov (Ed.), *Advances in Psychology Research*, vol. 14. New York: Nova Science.

Schunn, C. D., Lovett, M., & Reder, L. M. (2001). Awareness and working memory in strategy adaptivity. *Memory & Cognition*, *29*(2), 254-266. 10.3758/BF03194919

Schunn, C. D., & Reder, L. M. (2001). Another source of individual differences: Strategy adaptivity to changing rates of success. *Journal of Experimental Psychology: General*, *130*(1), 59-76. 10.1037/0096-3445.130.1.59

Lovett, M. C., & Schunn, C. D. (2000). The importance of frameworks for directing empirical questions: Reply to Goodie and Fantino. *Journal of Experimental Psychology: General, 129*(4), 453-456. 10.1037/0096-3445.129.4.453

Lovett, M. C., & Schunn, C. D. (1999). Task representations, strategy variability and base-rate neglect. *Journal of Experimental Psychology: General*, *128*(2), 107-130. 10.1037/0096-3445.128.2.107

Reder, L. M., & Schunn, C. D. (1999). Bringing together the psychometric and strategy worlds: Predicting adaptivity in a dynamic task. In D. Gopher and A. Koriat (Eds.), *Cognitive regulation of performance: Interaction of theory and application. Attention and Performance XVII* (pp. 315-342). Cambridge, MA: MIT Press.

Schunn, C. D., & Reder, L. M. (1998). Individual differences in strategy adaptivity. In D. L. Medin (Ed.), *The psychology of learning and motivation* (pp. 115-154). York, PA: Academic.

Schunn, C. D., Reder, L. M., *Nhouyvanisvong, A., Richards, D. R., & Stroffolino, P.J.* (1997). To calculate or not calculate: A source activation confusion (SAC) model of problem-familiarity's role in strategy selection. *Journal of Experimental Psychology: Learning, Memory, & Cognition*, *23*(1), 3-29. 10.1037/0278-7393.23.1.3

Reder, L. M., & Schunn, C. D. (1996). Metacognition does not imply awareness: Strategy choice is governed by implicit learning and memory. In L. M. Reder (Ed.), *Implicit memory and metacognition* (pp. 45-78). Mahwah, NJ: Erlbaum.

General Cognitive Science

Schunn, C. D. (2024). Analogy. In *Elgar Encyclopedia of Interdisciplinarity and Transdisciplinarity* (pp. 24-27). Edward Elgar Publishing.

Schunn, C. D., (2019). What should cognitive science look like? Neither a tree nor physics. *Topics in Cognitive Science, 11*(4), 845-852. 10.1111/tops.12467

Liu, A. S., & Schunn, C. D. (2016). The central questions of spatial cognition. In S. Chipman (Ed.), *The Oxford Handbook of Cognitive Science*. Oxford University Press.

Altmann, E. M. & Schunn, C. D. (2012). Decay versus interference: A new look at an old interaction. *Psychological Science*, *23*(11), 1435-1437. 10.1177/0956797612446027

Nokes, T. J., Schunn, C. D., & Chi, M. T. H. (2010). Problem solving and human expertise. In E. Baker, B. McGraw, & P. Peterson (Eds.), *International Encyclopedia of Education*, Third Edition. Oxford, UK: Elsevier.

Schunn, C. D. & *Nelson, M. M.* (2008). Expert-novice studies: An educational perspective. In E. M. Anderman (Ed.), *Psychology of Classroom Learning: An Encyclopedia*. Detroit, MI: Macmillan Reference.

Schunn, C. D., (2008). John Robert Anderson biography. In E. M. Anderman (Ed.), *Psychology of Classroom Learning: An Encyclopedia*. Detroit, MI: Macmillan Reference.

Christensen, B. T., & Schunn, C. D. (2005). Spontaneous access and analogical incubation effects. *Creativity Research Journal*, *17*(2), 207-220. 10.1207/s15326934crj1702&3_7

Schunn, C. D., Munro, P., Lebiere, C., & Lovett, M. C. (2005). Introduction to the best of ICCM2004. *Cognitive Systems Research*, *6*(1), 1-3. 10.1016/j.cogsys.2004.09.001

Schunn, C. D., & Wallach, D. (2005). Evaluating goodness-of-fit in comparison of models to data. In W. Tack (Ed.), *Psychologie der Kognition: Reden and Vorträge anlässlich der Emeritierung von Werner Tack* (pp. 115-154). Saarbrueken, Germany: University of Saarland Press.

Schunn, C. D., & Vera, A. H. (2004). Cross-cultural similarities in category structure. *Thinking & Reasoning, 10*(3), 273-287. 10.1080/13546780442000097

Schunn, C. D., & Gray, W. D. (2002). Introduction to the special issue on computational cognitive modeling. *Cognitive Systems Research*, *3*, 1-3. 10.1016/S1389-0417(01)00038-9

MacWhinney, B., St. James, J., Schunn, C., Li, P., Schneider, W. (2001). STEP – A system for teaching experimental psychology using E-Prime. *Behavioral Research Methods, Instruments, & Computers*, *33*(2), 287-296. 10.3758/BF03195379

Reder, L. M., *Nhouyvansivong, A.,* Schunn, C. D., *Ayers, M. S., Angstadt, P.,* Hiraki, K. (2000). A mechanistic account of the mirror effect for word frequency: A computational model of remember/know judgments in a continuous recognition paradigm. *Journal of Experimental Psychology: Learning, Memory, & Cognition*, *26*(2), 294-320. 10.1037/0278-7393.26.2.294

Anderson, J. R., & Schunn, C. D. (2000). Implications of the ACT-R learning theory: No magic bullets. In R. Glaser (Ed.), *Advances in instructional psychology: Educational design and cognitive science, Vol. 5 (pp. 1-33).* Mahwah, NJ: Erlbaum.

Schunn, C. D., & Klahr, D. (1998). Production systems: Views on intelligent behavior. In W. Bechtel and G. Graham (Eds.), *A Companion to Cognitive Science* (pp. 542-551). Malden, MA: Blackwell.

Schunn, C. D., & Vera, A. H. (1995). Causality and the categorization of objects and events. *Thinking & Reasoning, 1*(3), 237-284. 10.1080/13546789508256910

INVITED TALKS

Making the case for affective processes as central to peer feedback learning. Invited seminar presented to the School of Foreign Languages, Northeast Normal University, Changchun, China, Novermber 2025

Strategies for effective research apprenticeships for undergraduates. Invited seminar presented to the School of Foreign Languages, Northeast Normal University, Changchun, China, November 2025

Interdisciplinary collaboration with computer scientists: Challenges and strategies. Invited seminar presented to the School of Foreign Languages, Northeast Normal University, Changchun, China, October 2025

Teacher planning using AI. Invited seminar presented to the School of Foreign Languages, Northeast Normal University, Changchun, China, October 2025

How do we decide how broadly or narrowly to analys student behaviors: The case of feedback quality. Invited seminar presented to the School of Foreign Languages, Northeast Normal University, Changchun, China, October 2025

GenAI as a tool for research on language and language-based learning data. Invited seminar presented to the School of Foreign Languages, Northeast Normal University, Changchun, China, October 2025

Wise guidance, not blind automation: Human-AI collaboration for scalable peer feedback analysis. Invited talk to the *PolyU Summit: RIDE-I for Higher Education Transformation*, Hong Kong, July 2025

Peer feedback in the era of Generative AI: How can AI best improve peer feedback research and practice? Invited talk given to the School of Foreign Languages, Beihang University, Beijing China, July 2025

From the potential of peer feedback to reliably strong outcomes: What can research tell us about how to effectively implement peer feedback? Invited keynote presentation to *The 14th International Conference on Teaching and Research on Foreign Language Writing*, Shanghai, China, October 2024

From the potential of peer feedback to reliably strong outcomes: What can research tell us about how to effectively implement peer feedback? Invited seminar presented to the School of Foreign Languages, Changchun Normal University, Changchun, China, October 2024

Peer feedback literacy: Beliefs or behaviors? Coherent or not? Invited seminar presented to the Foreign Languages Training Center, Northeast Normal University, Changchun, China, October 2024

Conditions for success: When do students learn more from peer feedback? Invited seminar presented to the Foreign Languages Training Center, Northeast Normal University, Changchun, China, October 2024

Gendered reactions to lower grades in stereotyped contexts. Invited seminar presented to the Foreign Languages Training Center, Northeast Normal University, Changchun, China, October 2024

Student-centered routines and their role in learning to read complex documents. Invited seminar presented to the Foreign Languages Training Center, Northeast Normal University, Changchun, China, October 2024

Designing effective curricular materials (for others): What actually matters? Invited seminar presented to the Center for Mathematical Modeling, Universidad de Chile, Santiago, Chile, April 2024

Applying data science to institutional university data to study challenges and successes. Invited seminar presented to the School of Civil Engineering, Universidad Austral de Chile, Valdivia, Chile, April 2024

When does peer feedback lead to learning? A large-scale cross-context analysis. Invited seminar presented to the Foreign Languages Training Center, Northeast Normal University, Changchun, China, November 2023

The good, bad, and ugly of comment prompts: What makes for a good guide to improve peer feedback quality? Invited seminar presented to the Foreign Languages Training Center, Northeast Normal University, Changchun, China, November 2023

An updated conceptualization of adult learner engagement: expanding the ABC model. Invited seminar presented to the Foreign Languages Training Center, Northeast Normal University, Changchun, China, November 2023

How can we objectively know the impacts of teachers on their students and are such evaluations less biased? Invited seminar presented to the Foreign Languages Training Center, Northeast Normal University, Changchun, China, November 2023

A large-scale investigation of when peer feedback does and does not improve learning. Invited talk presented at the Ludwig Maximilian University of Munich, July 2023.

A large-scale investigation of when peer feedback does and does not improve learning. Invited talk presented at the University of Tübingen, July 2023.

Effective interdisciplinary research collaboration. Invited seminar presented to the Foreign Languages Training Center, Northeast Normal University, Changchun, China, December 2022

Peer feedback as the engine for transforming the format of university instruction. Invited lecture presented to the Foreign Languages Training Center, Northeast Normal University, Changchun, China, December 2022

What is high quality feedback? Invited lecture presented to the Foreign Languages Training Center, Northeast Normal University, Changchun, China, November 2022

The known unknowns: Next steps for research and writing instruction with peer feedback. Keynote presented at the *2022 Conference on Informatization of Foreign Language Education*, Shenzhen, China, July 2022

How do we provide teachers with focused feedback from their students to improve their instruction? Invited lecture presented to the Foreign Languages Training Center, Northeast Normal University, Changchun, China, December 2021.

Growth mindset-belongingness interventions to address motivational concerns in students. Invited lecture presented to the Foreign Languages Training Center, Northeast Normal University, Changchun, China, December 2021.

To match or not to match: can we optimize learning from peer feedback by wise reviewer-reviewee pairings? Invited lecture presented to the Foreign Languages Training Center, Northeast Normal University, Changchun, China, November 2021.

Game-theory and peer feedback: do students fall victim to the "tragedy of the commons"? Invited lecture presented to the Foreign Languages Training Center, Northeast Normal University, Changchun, China, November 2021.

Re-evaluating the connection of peer feedback to the zone of proximal development. Invited lecture presented to the Foreign Languages Training Center, Northeast Normal University, Changchun, China, November 2020.

The kinds of experiences with peer feedback that improve ability to give peer feedback. Invited lecture presented to the Foreign Languages Training Center, Northeast Normal University, Changchun, China, October 2020.

What kind of peer feedback activities improve writing ability? Applying the ICAP theory to reveal new empirical patterns. Invited lecture presented to the Foreign Languages Training Center, Northeast Normal University, Changchun, China, October 2020.

Transforming frenemies to collaborators: Automated and peer feedback. Invited A*I Seminar Series* talk. Carnegie Mellon University. Pittsburgh, PA, October 2020.

Improvement science for first year students. Invited workshop presentation. University of Pittsburgh, Bradford. Bradford, PA, October 2019.

Stealth assessments & 2 important findings. Keynote presented at the *2019 SEISMIC Summer Meeting*. Ann Arbor, MI, June 2019.

The role of practical measurement in improvement science. Keynote presented at the *IFL 2019 Leader Summit*. Pittsburgh, PA, June 2019.

Learning from peer assessment. Keynote presented at the *2019 Conference on Informatization of Foreign Language Education*, Shenzhen, China, May 2019.

Errors in peer assessment: When do they tend to occur? Invited lecture presented to the Foreign Languages Training Center, Northeast Normal University, Changchun, China, May 2019.

Cross-cultural perspectives on peer assessment: Investigating MOOC data for variation in feedback content. Invited lecture presented to the Foreign Languages Training Center, Northeast Normal University, Changchun, China, May 2019.

Accountability in peer assessment: what kinds of pressures on students improve peer assessment? Invited lecture presented to the Foreign Languages Training Center, Northeast Normal University, Changchun, China, May 2019.

The importance of multi for writing revision in multi-peer assessment. Invited lecture presented to the Foreign Languages Training Center, Northeast Normal University, Changchun, China, May 2019.

When is peer assessment reliable and valid?—A large scale cross-context study. Invited lecture presented to the School of Foreign Languages, Northeast Normal University, Changchun, China, May 2019.

Integrating mathematics into core high school biology in ways that deepen science & mathematics at scale. Invited talk presented to the Weizmann Institute, Rehovot, Israel, May 2018.

Scientific sensemaking: A critical resource for science learning in school. Invited talk presented to the Educational Testing Service, Princeton, NJ, January 2018.

What kinds of models are most powerful for supporting science learning?: Models that integrate mechanism. Invited talk presented at the *Berkeley Graduate School of Education Fall 2017 Colloquium Series*. Berkeley, CA, November 2017.

Engineering in/&/or/for science education. Invited talk given at *National Academy of Science Workshop on Science Investigations and Engineering Design for Grades 6-12.* Washington, DC, November 2017.

Adaptability in individuals. Invited talk given at *National Academy of Engineering Workshop on Preparing the Engineering and Technical Workforce for Adaptability and Resilience to Change.* Washington, DC, November 2017.

Designing effective curricular materials: What actually matters? Invited talk presented at the *Gordon Research Conference: Chemistry Education Research & Practice.* Lewiston, ME, June 2017.

Modeling as an approach for integrating math and science learning. Invited research talk presented to *STEM education research group*, Bahcesehir University. Istanbul, Turkey, June 2017.

Core features of transformative STEM Learning. Invited talk presented at the *BAUSTEM Graduation Ceremony*. Istanbul, Turkey, June 2017.

TASA vision for learning: The power of talk to increase evidence-based learning. Keynote presentation given together with Lauren Resnick at the *TASA 2017 Midwinter Conference*. Austin, TX, January 2017.

How analogies propel team creativity and problem solving. Invited presentation to the *Molecular Biophysics/Structural Biology Seminar Series*, Pittsburgh, January 2017.

Cognitive science principles go to middle school science: How do they work in the real world? *Cognitive science colloquium series* speaker. Villanova, November 2016.

How analogies propel team creativity and problem solving. Invited talk at the *Second Annual RoBUST Symposium - The Science of Team Science.* Wayne State University, October 2016.

A science on inspirational examples in design. Invited talk at the *Congresso Internacional De Investigación en Diseño*, Universidad Nacional de Colombia, Bogota, Colombia, August 2016.

What kinds of models are most powerful for supporting science learning?: Models that integrate mechanism. Invited talk at the *Modeling and Model-Based Reasoning in STEM Conference***,** Purdue University, Purdue, IN, August 2016.

Coordinating diverse assessment evidences using digital badges. Invited talk at the *GIFT Symposium*, Princeton, NJ, May 2016.

Social learning via web-based reciprocal peer review. Invited talk at *Learning in Social Contexts*, Pittsburgh, PA, May 2016.

Analogy as the central workhorse for creativity and problem solving in teams. Invited plenary at the *2016 Science of Team Science (SciTS) Conference*, Phoenix, AZ, May 2016.

Analogies in the wilds of engineering creativity. Invited talk at *Engineering a Better Future: Engineering, Social Science and Innovation*, Pittsburgh, PA, April 2016.

Teaching writing in chemistry—Strategies that reduce instructor load and improve learning. Chemistry Colloquium, Dept. of Chemistry, University of Pittsburgh, March 2016.

What kinds of examples inspire creativity? Invited talk, Dept. of English, Jilin University, Changchun, China, November 2015.

Using SWoRD peer review to transform writing instruction. Invited talk, School of Foreign Languages, Northeast Normal University, Changchun, China, November 2015.

What is the most efficient method to score writing?: Computer-based scoring vs. computer-assisted peer scoring. Invited talk, School of Foreign Languages, Northeast Normal University, Changchun, China, November 2015.

The science and art of science paper writing, submission, and publishing. Invited talk, School of Foreign Languages, Northeast Normal University, Changchun, China, November 2015.

How to motivate students' lifelong interest in the sciences? Invited talk, School of Foreign Languages, Northeast Normal University, Changchun, China, November 2015.

Strategic roles of leadership and information systems in adaptive team expertise: A quantitative case study of the mars exploration rover teams. Invited talk presented to the *Networking and Information Technology R&D SEW Group*, Arlington, VA, May 2015.

The power of peer feedback. Keynote talk presented at *Writing in ELA and Mathematics: Setting Students Up for Success*. Baltimore, MD, May 2015.

When (and why) do mathematical representations help students think scientifically? Keynote talk at *Diagrams as Vehicles of Scientific Reasoning*, Pittsburgh, PA, April 2015.

How does the nature of badge content affect badge value to learning? Invited presentation to TiER1 Performance. Covington, KY, March 2015.

Principles of cognitive science: Instructional judo for improved math and science learning. Keynote address presented at the *Math Science Collaborative Network Connections* event, Pittsburgh, PA, February 2015.

The feedback bottleneck problem in CC and NGSS: Can scaffolded student peer review be the savior? Invited presentation to the RAND Psychology Speaker Series, Pittsburgh, PA, November 2014.

When STEM integration improves performance in both science and mathematics: The good, the bad, and the ugly of Mendelian inheritance. Invited colloquium, School of Education, University of Delaware, Newark, DE, November 2014.

Measuring the right things: Where do you want your learners to go? Symposium presentation at the *2014 NSF AISL PI Meeting*. Washington, DC, August 2014.

Spatial mechanisms at play: Thinking and learning with physical robots. Keynote talk presented at the *1st Pennsylvania Spatial Cognition Symposium*. State College, PA, May 2014.

The impact of cognitive science principles on middle school science learning: The outcomes of a large randomized control trial study. Invited talk given to the School of Education, University of Tokyo. Tokyo, Japan, November 2013

Bridging Formal and Informal Science Learning through the Concept of Activation. Invited talk given at *Activating Inspiration and Creativity: The Tokyo International Symposium for Informal Learning in Art, Science, and Technology*. Tokyo, Japan, November 2013.

Linguistics research/practice in peer review. Invited talk given to the School of Foreign Languages, Beihang University, Beijing China, August 2013.

Engineering high school biology into the 21st Century. Invited talk presented at *STEMSmart: Lessons Learned from Successful Schools*. Atlanta, GA, June 2013.

The search spaces of adaptive expertise in large team science. Invited talk presented at the *Symposium on Cognitive Systems and Discovery Informatics*. Mountain View, CA, June 2013.

Learning to write in college chemistry labs: How to make peer review work. Invited talk presented at the *Gordon Research Conference: Chemistry Education Research & Practice.* Newport, RI, June 2013.

Psychology of science and engineering. Invited talk presented at the *Art & Science of Science and Technology Forum & Roundtable*. Sandia National Laboratories, Albuquerque, NM, June, 2013

Teaching science with math & engineering in diverse classrooms. Invited talk presented at *STEM Smart: Lessons Learned from Successful Schools*. Baltimore, MA, March, 2013

Optimizing example distance to improve engineering ideation. Invited presentation at *Open Innovation: The Journey from Ideation to Innovation.* Austin, TX, November, 2012

The transfer between formal and informal learning environments in science. Invited plenary presentation at the *Annual Great Lakes Planetarium Association Conference*, Pittsburgh, PA, October, 2012

Science Activation. Invited plenary presentation at the *2012 National Conference on Summer Learning*, Pittsburgh, PA, October, 2012

Optimizing example distance to improve engineering ideation. Invited plenary presentation at the *SciSIP Principal Investigators' Conference*, Washington, DC, September, 2012

Strategic visual support can inspire or hinder teams: What underlies these effects? Invited talk at *International Forum of Visual Practitioners 2012 Conference*, Pittsburgh, July, 2012

Gap-closing benefits from design-based learning and the role of the administrator. Invited talk at *The Cincinnati Engineering Enhanced Math and Science Program (CEEMS) Administrators' Academy*, Cincinnati, OH, July, 2012

Insights from the learning sciences for measuring for innovation in education. Invited talk at the Grantmakers for Education Member Briefing, *A Renaissance of Wonder: Supporting Creativity through Digital Media and Learning*, Pittsburgh, PA, April, 2012

Learning to argue scientifically using computer and web-based peer feedback. Invited talk at the *LTAC Frontier Lecture Series*, Texas A&M University, February, 2012

Obtaining wisdom via scaffolded peer review. Invited talk at the *iSchool Colloquium Series*, University of Pittsburgh, December, 2011

Motivating students in & out of classrooms, Invited talk to the *Faculty Development Series* of the Center for Instructional Development & Distance Education, University of Pittsburgh, October, 2011

Science Learning Activation: A new framework for building gender equity. Invited talk at Ewha Womans University, Seoul, South Korea, April, 2011

On the benefits and pitfalls of analogies for innovative design. Invited talk at Sungkyunkwan University, Department of Interactional Studies, Seoul, South Korea, March, 2011

Design principles for adding game-like features to Robo Math. Invited talk at the *Center for Advanced Technology in Schools (CATS) Workshop For Research on Games and Learning*, Los Angeles, CA, January, 2011

What makes engineering teams succeed? Better consideration of options. Invited talk at the *3rd biennial conference of the International Society for Psychology of Science and Technology*, Berkeley, CA, August, 2010

What does it mean for cognitive psychologists to study groups of scientists at work?: The interplay of cognitive and social processes. Invited talk at the *2nd Purdue Symposium on Psychological Sciences*, West Lafayette, IN, June, 2010

Standards in K-12 Tech Literacy and Engineering: Implications for Design and Research. Invited symposium presentation at the *2009 NSF DR-K12 PI Meeting*. Washington, DC, November, 2009

Engineering in/&/or/for science education. Invited talk at the *2009 Carnegie Symposium From Child to Scientist: Mechanisms of Learning and Development*. Pittsburgh, PA, October, 2009

Peer reviewers as effective audience, teacher, and learner. Keynote speaker to the *Fifth Biennial Conference of the European Association for the Teaching of Academic Writing*. Coventry, England, July, 2009

Diving deeper into the black box: Sampling from automated video collection to understand what influences innovation processes. Invited symposium presentation at *Advancing the Study of Innovation and Globalization in Organizations*. Nuremberg, Germany, July, 2009

Learning experiment design and analysis from worked examples. Invited symposium presentation at the *Council of Science Editors 52nd Annual Meeting*. Pittsburgh, PA, May, 2009

From tools to innovation: What cognitive processes lie in between? Invited talk at the *Purdue Mechanical Engineering Graduate Seminar*. West Lafayette, IN, December, 2008

Analogies between science and design: What models of science can learn from models of engineering design? Invited talk given at the *Symposium on Computational Approaches to Creativity in Science*. Palo Alto, CA, March, 2008

The science of educational reform: The case of writing in the disciplines. Keynote talk to the *2008 Educational Research Exchange*. Kent, OH, March, 2008

Do universities teach thinking? Invited talk at the *Kent State Learning Communities Series*. Kent, OH, October, 2004

Learning to be a good reviewer through scaffolded classroom-based reciprocal evaluation. Invited mini-session presentation to the *2004 APA Education Leadership Conference*. Washington, DC, September, 2004

Using model-based reasoning in psychology education. Invited plenary panel presentation to the *2004 APA Education Leadership Conference*. Washington, DC, September, 2004

Models of seeing with visualizations. Invited panel presentation at the *Human Systems Integration Symposium*. Newport, RI, May, 2004

Supporting collaborative scientific discovery. Invited talk at the *NASA Information Science HCC review meeting*. Pittsburgh, PA, March, 2003

On the value of fitting models to data. Paper presented at the *Digital Human Modeling for Design and Engineering Conference*. Crystal City, VA, June, 2001

Psychologist in a box: Capturing the skills of the expert scientist using ACT-R. Invited talk given at the *Navy Center for Applied Research in Artificial Intelligence Seminar Series,* Naval Research Lab, October, 2000

Mechanisms of adaptivity: Insights from dogs who can't learn new tricks. Invited talk given to the *Psychology Department Lecture Series*, University of Maryland, College Park, September, 2000

What makes collaborations across a distance succeed?: The case of the Cognitive Science community. Invited talk given to the Psychology Institute, Basel, Switzerland, July, 2000

Now they see the point: Improving science reasoning through making predictions. Invited talk given to the Psychology Institute, Basel, Switzerland, July, 2000

What gestures reveal about the scientist's mind. Invited talk given at the *Krasnow Institute Lecture Series*, Fairfax, VA, November, 1999

Acquiring expertise in science: What, when, and how. Invited talk given to the Psychology Institute, Basel, Switzerland, June, 1998

Note: I no longer track regular conference talks, papers, and posters.