

WILLIAM R. PENUEL  
3690 Darley Avenue  
Boulder, CO 80305  
Email: [bpenuel@gmail.com](mailto:bpenuel@gmail.com)

## EDUCATION

- 1993-1996      **PhD in Developmental Psychology**  
Clark University  
Dissertation: *Communicative Processes in Cultural Identity Formation: A Mediated Action Account*  
  
Chair: James V. Wertsch  
Committee Members: James Paul Gee, Nancy Budwig
- 1991-1992      **EdM in Counseling Processes**  
Harvard Graduate School of Education  
  
Master's Project: *An Ethnographic Evaluation of an HIV/AIDS Prevention Program*  
  
Advisor: Robert Selman
- 1988-1991      **BA in Psychology**  
Clark University  
  
Bachelor's Thesis: *Animals as Objects of Moral Concern: A Narrative Approach*  
  
Advisor: Bernard Kaplan

## HONORS AND AWARDS

Fellow, International Society for Design and Development in Education (2015)  
AERA Fellow (2014)  
Jacob Hiatt Fellow in Psychology (1994-95)  
Phi Beta Kappa (1991)  
*Graduated Summa Cum Laude* from Clark University (1991)  
Outstanding Undergraduate in Psychology (1991)

## **POSITIONS HELD**

2011-present      **Professor of Educational Psychology and Learning Sciences**  
School of Education  
University of Colorado-Boulder

## **POSITIONS HELD (Cont'd)**

2006-2011      **Director of Evaluation Research**  
Center for Technology in Learning  
SRI International

2000-2006      **Senior Education Researcher**  
Center for Technology in Learning  
SRI International

1998-2000      **Research Social Scientist**  
Center for Technology in Learning  
SRI International

1997-98      **Program Evaluator**  
San Francisco Unified School District

1996-97      **Program Evaluation Coordinator**  
Metropolitan Nashville Public Schools

## **COURSES TAUGHT**

**Educational Evaluation**, University of Colorado  
**Seminar in Human Development**, University of Colorado  
**Adolescent Development and Educational Psychology**, University of Colorado  
**Learning with Technology in and out of School**, University of Colorado  
**Contexts that Promote Youth Development**, Stanford University  
**Technology in Science Education**, University of South Carolina  
**Assessment of Student Multimedia Projects**, Foothill College

## MANUSCRIPTS IN PREPARATION

\*Student author

\*Cartun, A., Penuel, W. R., & West-Puckett, S. (in preparation).  
Students' experience of participatory cultures in the English  
classroom.

Penuel, W. R., & Shepard, L. A. (in preparation). Sociocognitive and  
sociocultural models of assessment. To appear in A. Rupp & J. P.  
Leighton, *Cognitive Models of Assessment*.

Penuel, W. R., & Gallagher, D. (in preparation, under contract).  
*Cultivating and sustaining research-practice partnerships in education*.  
Cambridge, MA: Harvard Education Press.

Pinkard, N., Penuel, W. R., \*Dibie, O., \*Sultan, A. M., \*Quigley, D.,  
Sumner, T., Van Horne, K., Acholonu, U. (in preparation). *Mapping  
and modeling the abundance, diversity, and accessibility of summer  
learning opportunities at the scale of a city*.

## MANUSCRIPTS IN REVIEW

Penuel, W. R., \*Harrison, J., Hendry, M., Falk, J. H., Staus, N., &  
Dierking, L. (under review). Using agent-based modeling to gain  
insight into adolescent interest development. *The Journal of the  
Learning Sciences*.

Penuel, W. R., DeBarger, A. H., Boscardin, C. K., Moorthy, S.,  
Beauvineau, Y., Kennedy, C., & \*Allison, K. (in revision).  
Investigating purposeful curriculum adaptation as a strategy to  
improve science teaching and learning. *Science Education*.

Staus, N., Falk, J. H., Penuel, W. R., Dierking, L., Wyld, J., & Bailey, D.  
(in revision). Using cluster analysis to examine patterns of  
declining STEM interest during adolescence. *Science Education*.

O'Connor, K., & Penuel, W. R. (in revision). Organizing learning at the near and far end of the trajectory. *The Journal of the Learning Sciences*.

\*Severance, S., Penuel, W. R., \*Johnson, R., Leary, H., & Sumner, T. (in revision). Curriculum co-design as a strategy for supporting equitable implementation of the Next Generation Science Standards. For special issue of *The Journal of the Learning Sciences*.

## REFEREED JOURNAL ARTICLES

Maul, A., Penuel, W. R., Gallagher, L., \*Dadey, N., Podkul, T., & \*Price, E. (in press). Developing a measure of interest-related pursuits: The Connected Learning survey. *Educational Technology Research and Development*.

Penuel, W. R., Farrell, C. C., Allen, A.-R., \*Toyama, Y., & Coburn, C. E. (in press). What research district leaders find useful. *Educational Policy*.

Penuel, W. R., Bevan, B., Bell, P., Falk, J., & Buffington, P. (2016). Using social networks to enhance research use in planning for and supporting educational change. *Journal of Educational Change* 17 (2), 251-278.

\*Johnson, R., Penuel, W. R., \*Severance, S., & \*Leary, H. (2016). Teachers, tasks, and tensions: Lessons from a research-practice partnership. *Journal of Mathematics Teacher Education* 19 (2), 169-185.

Falk, J. H., Dierking, L., Staus, N., Penuel, W. R., \*Bailey, D., & \*Wyld, J. (in press). Understanding youth STEM interest and participation pathways within a community: The Synergies Project. *International Journal of Science Education, Part B*.

Leary, H., \*Severance, S., Penuel, W. R., \*Quigley, D., Sumner, T., & Devaul, H. (2016). Designing a deeply digital science curriculum: Supporting teacher learning and implementation with

- organizing technologies. *Journal of Science Teacher Education*, 27 (1), 61-77.
- Penuel, W. R. (2016). Studying science and engineering learning in practice. *Cultural Studies in Science Education*, 11(1), 89-104.
- Coburn, C. E., & Penuel, W. R. (2016). Research-practice partnerships in education: Outcomes, dynamics, and open questions *Educational Researcher*, 45(1), 48-54.
- \*Allen, C. D., & Penuel, W. R. (2015). Studying teachers' sensemaking to analyze teachers' responses to professional development focused on new standards. *Journal of Teacher Education* 66 (2), 136-149.
- DeBarger, A. H., Penuel, W. R., & Harris, C. J. (2015). Designing NGSS assessments to evaluate the efficacy of curriculum interventions. *American Journal of Evaluation*. Available online early at: <http://aje.sagepub.com/content/early/2015/05/08/1098214015581707.abstract>.
- Frank, K. A., Penuel, W. R., & Krause, A. E. (2015). What is a "good" social network for a system? Knowledge flow and organizational change. *Journal of Policy Analysis and Management*, 34(2), 378-402.
- Penuel, W. R. (2015). Commentary on Briggs and Peck: Learning progressions as evolving tools in joint enterprises. *Measurement: Interdisciplinary Research and Perspectives* 13 (2), 123-127.
- Penuel, W. R., Allen, A.-R., Farrell, C., & Coburn, C. E. (2015). Conceptualizing research-practice partnerships as joint work at boundaries. *Journal for Education of Students at Risk (JESPAR)* 20 (1-2), 182-197.
- Penuel, W. R., Harris, C. J., D'Angelo, C., DeBarger, A. H., Gallagher, L. P., Kennedy, C. A., & Cheng, B. H. (2015). Impact of project-based curriculum materials on student learning in science: Results of a randomized controlled trial. *Journal of Research in Science Teaching*, 52(10), 1362-1385.

- Penuel, W. R., Phillips, R. A., & Harris, C. J. (2014). Analysing curriculum implementation from integrity and actor-oriented perspectives. *Journal of Curriculum Studies*, 46 (6), 751-777.
- Hegedus, S., Dalton, S., Roschelle, J., Penuel, W. R., Dickey-Kurdziolek, M., & Tatar, D. (2014). Investigating why teachers continued use and sharing of an educational innovation after the research has ended. *Mathematical Thinking and Learning*, 16 (4), 1-22.
- Penuel, W. R. (2014). Emerging forms of intervention research in education. *Mind, Culture, Activity*, 21 (2), 97-117.
- Penuel, W. R., Confrey, J., Maloney, A., Rupp, A. A. (2014). Design decisions in developing assessments of learning trajectories. *The Journal of the Learning Sciences*, 23 (1), 47-95.
- Gutiérrez, K. D., & Penuel, W. R. (2014). Relevance to practice as a criterion for rigor. *Educational Researcher*, 43 (1), 19-23.
- Sun, M., Penuel, W. R., Frank, K. A., Gallagher, H. A., & Youngs, P. A. (2013). Shaping professional development to promote the diffusion of instructional expertise among teachers. *Educational Evaluation and Policy Analysis*, 35 (3), 344-369.
- Sun, M., Frank, K. A., Penuel, W. R., & Kim, C. (2013). How external institutions penetrate schools through formal and informal leaders. *Educational Administration Quarterly*. Online first at: <http://eaq.sagepub.com/content/49/4/610>.
- Penuel, W. R., Frank, K. A., Sun, M., Kim, C., & Singelton, C. (2013). The organization as a filter of institutional diffusion. *Teachers College Record*, 115 (1), 1-33.
- Hand, V., Penuel, W. R., & Gutiérrez, K. D. (2012). Framing to disrupt and expand opportunities to learn in multilevel educational systems. *Human Development*, 55, 250-268.
- Harris, C. J., \*Phillips, R. S., & Penuel, W. R. (2012). Examining teachers' instructional moves aimed at developing students' ideas

and questions in learner-centered science classrooms. *Journal of Science Teacher Education*, 23(7), 768-788.

Penuel, W. R., & Fishman, B. J. (2012). Large-scale intervention research we can use. *Journal of Research in Science Teaching*, 49(3), 281-304.

Penuel, W. R., Bates, L., Gallagher, L. P., Pasnik, S., Llorente, C., Townsend, E., Domínguez, X., VanderBorgh, M. (2012). Supplementing literacy instruction with a media-rich intervention: Results of a randomized controlled trial. *Early Childhood Research Quarterly*, 27 (1), 115-127.

Penuel, W. R., Sun, M., Frank, K. A., & Gallagher, H. A. (2012). Using social network analysis to study how collegial interactions can augment teacher learning from external professional development. *American Journal of Education*, 119 (1), 103-136.

Koch, M., Gorges, T., & Penuel, W. R. (2012). Build IT: Scaling and sustaining an afterschool computer science program for girls. *Afterschool Matters*, 16, 58-66.

Penuel, W. R., Fishman, B. J., Cheng, B. H., & Sabelli, N. (2011). Organizing research and development at the intersection of learning, implementation, and design. *Educational Researcher*, 40(7), 331-337.

Penuel, W. R., & Means, B. (2011). Using large-scale databases in evaluation: Advances, opportunities, and challenges. *American Journal of Evaluation* 32(1), 118-133.

Penuel, W. R., Gallagher, L. P., & Moorthy, S. (2011). Preparing teachers to design sequences of instruction in Earth science: A comparison of three professional development programs. *American Educational Research Journal*, 48 (4), 996-1025.

Penuel, W. R., Singleton, C., & Roschelle, J. (2011). Classroom network technology as a support for systemic mathematics reform: Examining the effects of Texas Instruments' MathForward Program on student achievement in a large, diverse district. *Journal of Computers in Mathematics and Science Teaching*, 30 (2), 179-202.

- Fishman, B. J., Penuel, W. R., Hegedus, S., & Roschelle, J. (2011). What happens when the research ends? Factors related to the sustainability of a technology-infused mathematics curriculum. *Journal of Computers in Mathematics and Science Teaching*, 30(4), 329-353.
- Frank, K. A., Zhao, Y., Penuel, W. R., Ellefson, N., & Porter, S. (2011). Focus, fiddle and friends: A longitudinal study of characteristics of effective technology professional development. *Sociology of Education*, 84 (2), 137-156.
- Shear, L., & Penuel, W. R. (2010). Rock-solid support: Florida district weighs effectiveness of science professional learning. *Journal of Staff Development*, 31(5).
- Penuel, W. R., Riel, M., \*Joshi, A., & Frank, K. A., (2010). The alignment of the informal and formal supports for school reform: Implications for improving teaching in schools. *Educational Administration Quarterly*, 46(1), 57-95.
- Penuel, W. R., & Gallagher, L. P. (2009). Comparing the efficacy of three approaches to preparing teachers to teach for deep understanding in Earth science: Short-term impacts on teachers and teaching practice. *The Journal of the Learning Sciences*, 18(4), 461-508.
- Penuel, W. R., McWilliams, H., McAuliffe, C., Benbow, A., Mably, C., & Hayden, M. (2009). Teaching for understanding in Earth science: Comparing impacts on planning and instruction in three professional development designs for middle school science. *Journal of Science Teacher Education*, 20 (5), 415-436.
- Penuel, W. R., Fishman, B. J., Gallagher, L. P., Lopez-Prado, B., & Korbak, C. (2009). Is alignment enough? Investigating the effects of state policies and professional development on science curriculum implementation. *Science Education*, 93(4), 656-677.
- Penuel, W. R., Riel, M., Frank, K. A., & Krause, A. (2009). Analyzing teachers' professional interactions in a school as social capital: A social network approach. *Teachers College Record*, 11(1), 124-163.



- Roschelle, J., Rafanan, K., Bhanot, R., Estrella, G., Penuel, W. R., Nussbaum, M., & Claro, S. (2009). Scaffolding group explanation and feedback with handheld technology: Impact on students' mathematics learning. *Educational Technology Research and Development*, 58(4), 399-419.
- Hegedus, S. J., & Penuel, W. R. (2008). Studying new forms of participation and identity in mathematics classrooms with integrated communication and representational infrastructures. *Educational Studies of Mathematics* 68 (2), 171-184.
- Penuel, W. R., Fishman, B. J., Yamaguchi, R., & Gallagher, L. P. (2007). What makes professional development effective? Strategies that foster curriculum implementation. *American Educational Research Journal*, 44(4), 921-958.
- Penuel, W. R., Roschelle, J., & Shechtman, N. (2007). The WHIRL co-design process: Participant experiences. *Research and Practice in Technology Enhanced Learning*, 2(1), 1-24.
- Penuel, W. R., Boscardin, C. K., Masyn, K., & Crawford, V. M. (2007). Teaching with student response systems in elementary and secondary education settings: A survey study. *Educational Technology Research and Development*, 55(4), 315-346.
- Penuel, W. R., Sussex, W., Korbak, C., & Hoadley, C. (2006). Investigating the potential of using social network analysis in educational evaluation. *American Journal of Evaluation*, 27(4), 437-451.
- Penuel, W. R. (2006). Implementation and effects of 1:1 computing initiatives: A research synthesis. *Journal of Research on Technology in Education*, 38(3), 329-348.
- Yarnall, L., Shechtman, N., & Penuel, W. R. (2006). Using handheld computers to support improved classroom assessment in science: Results from a field trial. *Journal of Science Education and Technology*, 15(1), 1-17.

- Penuel, W. R., Shear, L., Korbak, C., & Sparrow, E. (2005). The roles of regional partners in supporting an international Earth science education program. *Science Education*, 89(6), 956-979.
- Penuel, W. R., & Yarnall, L. (2005). Designing handheld software to support classroom assessment: An analysis of conditions for teacher adoption. *Journal of Technology, Learning, and Assessment*, 3(5). Available from <http://www.jtla.org>.
- Roschelle, J., Penuel, W. R., Yarnall, L., & Shechtman, N. (2005). Handheld tools that “informat” assessment of student learning in science: A requirements analysis. *Journal of Computer Assisted Learning*, 21(3), 190-203.
- Penuel, W. R., Tatar, D., Roschelle, J., & Yarnall, L. (2004). The role of research on contexts of teaching practice in informing the design of handheld learning technologies. *Journal of Educational Computing Research*, 30(4), 331-348.
- Penuel, W.R., & Means, B. (2004). Implementation fidelity and variation in a science inquiry program. *Journal of Research in Science Teaching*, 41(3), 294-315.
- Tatar, D., Roschelle, J., Vahey, P., & Penuel, W. R. (2003). Handhelds go to school. *IEEE Computer*, 36(9), 58-65.
- Means, B., Roschelle, J., Penuel, W. R., Sabelli, N., & Haertel, G. D. (2003). Technology’s contribution to teaching and policy: Efficiency, standardization, or transformation? *Review of Educational Research*, 27, 159-181.
- Yarnall, L., Penuel, W. R., Ravitz, J., Murray, G., Means, B., & \*Broom, M. (2003). Portable assessment authoring: Using handheld technology to assess collaborative inquiry. *Education, Communication, Information*, 3(1), 7-55.
- Cole, K., Simkins, M., & Penuel, W. R. (2002). Learning to teach with technology: Strategies for inservice professional development. *Journal of Technology and Teacher Education*, 10 (3), 431-455.

- Shear, L., & Penuel, W. R. (2002). Putting the 'learning' in adventure learning: Design principles for technology-supported classroom inquiry. *Journal of Curriculum Supervision*, 17, 315-335.
- Coleman, E. B., & Penuel, W. R. (2000). Web-based student assessment for program evaluation. *Journal of Science Education and Technology*, 9(4), 327-342.
- Davey, T. L., Penuel, W. R., Allison-Tant, E., & Rosner, A. M. (2000). The HERO program: A case for school social work services. *Social Work in Education*, 22(3), 177-190.
- Penuel, W. R., & Davey, T. L. (1999). 'I don't like to nowhere but here!' The shelter as mediator of U.S. homeless youth's identity formation. *Mind, Culture, and Activity*, 6, 222-236.
- Penuel, W. R. & \*Freeman, T. (1997). Participatory action research in youth work practice. Special issue: Research methods in child and youth care practice. *Child and Youth Care Forum*, 26, 175-186.
- Penuel, W. R. (1997). Between self and tribe: Revising some modernist notions for a postmodern world. *Theory and Psychology*, 7(5), 703-708.
- Penuel, W. R. (1996). Hearing different voices: Two languages in youth work practice. *Journal of Child and Youth Care Work*, 11, 84-95.
- Penuel, W. R. & Wertsch, J. V. (1995). Dynamics of negation in the identity politics of cultural Other and cultural self. *Culture and Psychology*, 1(3), 343-359.
- Penuel, W. R. & Wertsch, J. V. (1995). Vygotsky and identity formation: A sociocultural approach. *Educational Psychologist*, 30(2), 83-92.

## REFEREED CONSENSUS REPORTS

- National Research Council. (2014). *Assessment and the Next Generation Science Standards*. Washington, DC: National Academies Press.

## REFEREED CONFERENCE PROCEEDINGS

Penuel, W. R., \*Severance, S., \*Johnson, R., Leary, H., & \*Miller, S. (2014). Negotiating the object of codesign. In J. L. Polman, E. A. Kyza, D. K. O'Neill, I. Tabak, W. R. Penuel, A. S. Jurow, K. O'Connor, T. R. Lee & L. D'Amico (Eds.), *Learning and Becoming in Practice: The International Conference of the Learning Sciences (ICLS) 2014*. Boulder, CO: International Society of the Learning Sciences.

Penuel, W. R., Falk, J. H., Dierking, L. D., Kirshner, B., Haun-Frank, J., & \*York, A. J. (2012). Locating the development of interest: Tools for studying the mutual constitution of persons and cultural practices in places. In J. van Aalst, K. Thompson, M. J. Jacobson & P. Reimann (Eds.), *The future of learning: Proceedings of the 10th international conference of the learning sciences (ICLS 2012) – Volume 2, short papers, symposia, and abstracts* (pp. 326-330). Sydney, Australia: ISLS.

Penuel, W. R., Beauvineau, Y., DeBarger, A. H., Moorthy, S., & \*Allison, K. (2012). Fostering teachers' use of talk moves to promote productive participation in scientific practices. In J. van Aalst, K. Thompson, M. J. Jacobson & P. Reimann (Eds.), *The future of learning: Proceedings of the 10th international conference of the learning sciences (ICLS 2012) – Volume 2, short papers, symposia, and abstracts* (Vol. 2, pp. 505-506). Sydney, Australia: ISLS.

Penuel, W. R., Moorthy, S., DeBarger, A., Beauvineau, Y., & \*Allison, K. (2012). *Tools for orchestrating productive talk in science classrooms*. Paper presented at the Workshop on Classroom Orchestration: Moving Beyond Current Understanding of the Field, at the International Conference of the Learning Sciences, Sydney, Australia. Prieto, L. P., Villagr a-Sobrino, S., Dimitriadis, Y., Schank, P., Penuel, W. R., & DeBarger, A. H. (2011, September). *Mind the gaps: Using patterns to change everyday classroom practice towards contingent CSCL teaching*. Paper presented at the Computer Supported Cooperative Learning, Hong Kong, PRC.

Penuel, W. R., Bates, L., Pasnik, S., Townsend, E., Gallagher, L. P., Llorente, C., et al. (2010). The impact of a media-rich science curriculum on low-income preschoolers' science talk at home. In

K. Gomez, L. Lyons & J. Radinsky (Eds.), *Learning in the disciplines: Proceedings of the 9th International Conference of the Learning Sciences* (pp. 238-245). Chicago, IL: International Society of the Learning Sciences.

Harris, C. J., \*Phillips, R. S., & Penuel, W. R. (2010). Eliciting and developing students' ideas and questions in a learner-centered environmental biology unit. In K. Gomez, L. Lyons & J. Radinsky (Eds.), *Learning in the disciplines: Proceedings of the 9th International Conference of the Learning Sciences* (pp. 261-268). Chicago, IL: International Society of the Learning Sciences.

Penuel, W. R., Fishman, B. J., & Gallagher, L. P. (2008). The mediating role of coherence in curriculum implementation. In P. A. Kirschner (Ed.), *Proceedings of the 7th International Conference of the Learning Sciences*. Mahwah, NJ: Erlbaum.

Rafanan, K., Roschelle, J., Bhanot, R., Gorges, T., Penuel, W. R. (2008). Measuring mathematics discourse in technology-supported collaborative activities. In P. A. Kirschner (Ed.), *Proceedings of the 7th International Conference of the Learning Sciences*. Mahwah, NJ: Erlbaum.

Penuel, W. R., Frank, K. A., & Krause, A. (2006). The distribution of resources and expertise and the implementation of schoolwide reform initiatives. In S. A. Barab, K. E. Hay & D. T. Hickey (Eds.), *Proceedings of the 7th International Conference of the Learning Sciences* (Vol. 1, pp. 522-528). Mahwah, NJ: Erlbaum.

Fishman, B. J., Penuel, W. R., & Yamaguchi, R. (2006). Fostering innovation implementation: Findings about supporting scale from GLOBE. In S. A. Barab, K. E. Hay & D. T. Hickey (Eds.), *Proceedings of the 7th International Conference of the Learning Sciences* (Vol. 1, pp. 168-174). Mahwah, NJ: Erlbaum.

Roschelle, J., Penuel, W. R., & Shechtman, N. (2006). Co-design of innovations with teachers: Definition and dynamics. In S. A. Barab, K. E. Hay & D. T. Hickey (Eds.), *Proceedings of the 7th International Conference of the Learning Sciences* (Vol. 2, pp. 606-612). Mahwah, NJ: Erlbaum.

- Penuel, W. R., Roschelle, J., & Abrahamson, L. (2005). Research on classroom networks for whole-class activities. In *Proceedings of the IEEE International Workshop on Wireless and Mobile Technologies in Education* (pp. 222-229). Los Alamitos, CA: IEEE.
- Penuel, W. R., Yarnall, L., Koch, M., & Roschelle, J. (2004). Meeting teachers in the middle: Designing handheld computer-supported activities to improve student questioning. In Y. B. Kafai, W. A. Sandoval, N. Enyedy, A. S. Nixon & F. Herrera (Eds.), *Proceedings of the International Conference of the Learning Sciences* (pp. 404-411). Mahwah, NJ: Lawrence Erlbaum.
- Yarnall, L., & Penuel, W. R. (2002). Structuring group learning within a Web-based science inquiry program. In G. Stahl (Ed.), *Proceedings of the 2002 Computer Support for Collaboration Learning Conference* (pp. 577-578). Boulder, CO. University of Colorado.
- Penuel, W. R., Cole, K.A., Korbak, C. (1999). Imagination, production, and collaboration in project-based learning using multimedia. In C. Hoadley (Ed), *Proceedings of the 1999 Computer Support for Collaboration Learning Conference* (pp. 445-453). Palo Alto, CA. Stanford University.
- Penuel, W. R. & Comparini, L. (1996). The authority of narrative discourse in youth work. In J. Knuf (Ed.), *Unity and diversity: Proceedings of the 4th annual international conference on narrative*. Lexington: University of Kentucky.
- Penuel, W. R. & \*Gereme, E. (1995). Interpreting youth, interpreting ourselves: Discourse analysis in child and youth care practice. In *Proceedings of the 1994 International Conference on Child and Youth Care*. Milwaukee, Wisconsin: NOCCWA.

## **BOOKS**

- Fishman, B. J., Penuel, W. R., Allen, A.-R., & Cheng, B. H. (Eds.). (2013). *Design-based implementation research: Theories, methods, and exemplars*. National Society for the Study of Education Yearbook.

Penuel, W. R., & O'Connor, K. (Eds.) (2010). *Learning research as a human science. National Society for the Study of Education Yearbook, 109(1)*.

Means, B., Penuel, B., & Padilla, C. (2001). *The connected school: Technology and learning in high school*. San Francisco, CA: Jossey-Bass.

## BOOK CHAPTERS

Penuel, W. R., & DeBarger, A. H. (in press). A research-practice partnership to improve formative assessment in science. In A. Daly & K. S. Finnigan (Eds.), *Thinking systemically: Improving districts under pressure*. Washington, DC: American Educational Research Association.

Penuel, W. R., & Shepard, L. A. (in press). Teaching and assessment. In D. Gitomer & C. Bell (Eds.), *Handbook of Research on Teaching*.

Sabelli, N., Penuel, W. R., & Cheng, B. H. (in press). Homeostasis, complexity, and educational policy informatics: Exploring unanticipated consequences and unrealized opportunities of policy decisions. In K. C. Desouza & E. W. Johnston, *Policy informatics*. Cambridge, MA: MIT Press.

Penuel, W. R., & Spillane, J. P. (2014). Learning sciences and policy design and implementation: Key tools and concepts for collaborative engagement. K. Sawyer (Ed.), *Cambridge Handbook of the Learning Sciences, 2<sup>nd</sup> Edition* (pp. 649-667). New York: Cambridge University Press.

Penuel, W. R., & Coburn, C. E. (2014). Introduction to Part I: Research use at the school and district level. In K. S. Finnigan & A. J. Daly (Eds.), *Using research evidence in education: From the schoolhouse door to Capitol Hill* (pp. 9-13). New York, NY: Springer.

Fishman, B. J., Penuel, W. R., Allen, A.-R., Cheng, B. H., & Sabelli, N. (2013). Design-based implementation research: An emerging model for transforming the relationship of research and practice. In B. J. Fishman, W. R. Penuel, A.-R. Allen & B. H. Cheng (Eds.), *Design-based implementation research: Theories, methods, and*

*exemplars. National Society for the Study of Education Yearbook* (pp. 136-156). New York, NY: Teachers College Record.

Penuel, W. R., Coburn, C. E., & Gallagher, D. (2013). Negotiating problems of practice in research-practice partnerships focused on design. In B. J. Fishman, W. R. Penuel, A.-R. Allen & B. H. Cheng (Eds.), *Design-based implementation research: Theories, methods, and exemplars. National Society for the Study of Education Yearbook* (pp. 237-255). New York, NY: Teachers College Record.

Penuel, W. R., Frank, K. A., Sun, M., & Kim, C. M. (2012). Teachers' social capital and the implementation of schoolwide reforms. In S. Kelly (Ed.), *Assessing teacher quality: Understanding teacher effects on instruction and achievement* (pp. 183-200). New York: Teachers College Press.

DeBarger, A., Penuel, W. R., Harris, C. J., & Schank, P. (2010). Teaching routines to enhance collaboration using classroom network technology. In F. Pozzi & D. Persico (Eds.), *Techniques for fostering collaboration in online learning communities: Theoretical and practical perspectives* (pp. 222-244). Hershey, PA: IGI Global.

Penuel, W. R., Frank, K. A., & Krause, A. (2010). Between leaders and teachers: Using social network analysis to examine the effects of distributed leadership. In A. J. Daly (Ed.), *Social network theory and educational change* (pp. 159-178). Cambridge, MA: Harvard University Press.

Penuel, W. R. (2010). Classroom uses of technology to manage instruction. *International Encyclopedia of Education*, 8, 133-139.

Penuel, W. R. (2010). A dialogical epistemology for educational evaluation. In W. R. Penuel & K. O'Connor (Eds.), *Learning research as a human science. National Society for the Study of Education Yearbook*, 109(1), 128-143.

Penuel, W. R., & O'Connor, K. (2010). Learning research as a human science: Old wine in new bottles? In W. R. Penuel & K. O'Connor (Eds.), *Learning research as a human science. National Society for the Study of Education Yearbook*, 109(1), 268-283.



O'Connor, K. & Penuel, W. R. (2010). Introduction. In W. R. Penuel & K. O'Connor (Eds). *Learning research as a human science. National Society for the Study of Education Yearbook*, 109(1), 1-16.

Penuel, W. R. (2010). Implementation and effects of 1:1 computing initiatives: A research synthesis. In L. Schrum (Ed.), *Considerations on technology and teachers: The best of JRTE* (Vol. 38, pp. 329-348). Washington, DC: International Society for Technology in Education.

Penuel, W. R. (2008). Making the most of one-to-one computing in networked classrooms. In J. Voogt & G. Knezek (Eds.), *International handbook of information technology in primary and secondary education* (pp. 925-931). Dordrecht: Springer.

Crawford, V. M., Schlager, M. S., Penuel, W. R., & Toyama, Y. (2008). Supporting the art of teaching in a data-rich, high-performance learning environment. In E. B. Mandinach & M. Honey (Eds.), *Data-driven school improvement: Linking data and learning* (pp. 109-129). New York: Teachers College Press.

Haertel, G. D., Means, B., & Penuel, W. R. (2007). Technology tools for collecting, managing, and using assessment data to inform instruction and improve achievement. In L. Smoulin, K. Lawless, & N. C. Burbules (Eds), *Information and communication technologies: Considerations of current practice for teachers and teacher educators. National Society for the Study of Education Yearbook*, 106 (2), 103-132.

Penuel, W. R., Lynn, E., & Berger, L. (2006). Classroom assessment with handheld computers. In M. van 't Hooft & K. Swan (Eds.), *Ubiquitous computing in education: Invisible technology, visible impact* (pp. 103-125). Mahwah, NJ: Erlbaum.

Penuel, W. R., Abrahamson, A. L., & Roschelle, J. (2006). Theorizing the transformed classroom: A sociocultural interpretation of the effects of audience response systems in higher education. In D. Banks (Ed.), *Audience response systems in higher education: Applications and cases* (pp. 187-208). Hershey, PA: Information Science Publishing.

- Means, B., & Penuel, W. R. (2005). Research to support scaling up technology-based educational innovations. In C. Dede, J. P. Honan & L. C. Peters (Eds.), *Scaling up success: Lessons from technology-based educational improvement* (pp. 176-197). San Francisco, CA: Jossey-Bass.
- Mislevy, R. J., Steinberg, L. S., Almond, R. G., Haertel, G. D., & Penuel, W. R. (2003). Improving educational assessment. In B. Means & G. D. Haertel (Eds.), *Evaluating educational technology: Effective research designs for improving learning*. (pp. 149-180). New York: Teachers College Press.
- Penuel, B., & Cohen, A. (2002). Coming to the crossroads of knowledge, learning, and technology: Integrating knowledge management and workplace learning. In M. Ackerman, V. Pipek, & V. Wulf (Ed.), *Sharing expertise: Beyond knowledge management* (pp. 57-76). Cambridge, MA: MIT Press.
- Means, B., Penuel, W. R., & Quelmallz, E. (2001). Developing assessments for tomorrow's classrooms. In W. Heinecke, & L. Blasi, (Eds.), *Research methods for educational technology. Volume 1: Methods of evaluating educational technology*. Greenwich, CT: Information Age Publishing.
- Penuel, W. R., & Davey, T.L. (2000). Meeting the educational needs of homeless teens. In J.H. Stronge & E. Reed-Victor (Eds.), *Educating homeless students: Promising practices* (pp. 63-78). Larchmont, NY: Eye on Education.
- Penuel, W. R. (1998). Vygotsky, Bakhtin, and identity formation: Sociocultural approaches to youth empowerment. In R. Bernhardt, C.N. Hedley, G. Cattaro, & V. Svolopoulos (Eds.), *Curriculum leadership: Redefining schools in the 21st century* (pp.153-176). Cresskill, NJ: Hampton Press.
- Penuel, W. R. & Wertsch, J.V. (1998). Historical representation as mediated action: Official history as a tool. In J. F. Voss & M. Carretero, (Eds.), *Learning and reasoning in history*, (pp. 23-38). Portland, OR: Woburn Press.

Wertsch, J.V. & Penuel, W. R. (1995). The individual-society antinomy revisited: Productive tensions in theories of development, communication, and education. In D.R. Olson & N.R. Torrance (Eds.), *Handbook of education and human development: New models of learning, teaching, and schooling*. New York: Basil Blackwell.

## SELECTED TECHNICAL REPORTS

Penuel, W. R., Briggs, D. C., Davidson, K. L., Herlihy, C., \*Sherer, D., Hill, H. C., Farrell, Caitlin C., Allen, A.-R. (2016). *Findings from a national survey of research use among school and district leaders*. Boulder, CO: National Center for Research in Policy and Practice.

Harris, C. J., Penuel, W. R., D'Angelo, C., DeBarger, A., & Gallagher, L. P. (2014). *Curriculum materials make a difference for next generation science learning: Results from Year 1 of a randomized controlled trial*. Menlo Park, CA and Boulder, CO: SRI International and University of Colorado.

Penuel, W. R., Lee, T. R., & Bevan, B. (2014). *Designing for equitable learning across settings*. San Francisco, CA: Exploratorium.

Coburn, C. E., Penuel, W. R., & Geil, K. (2013). *Research-practice partnerships at the district level: A new strategy for leveraging research for educational improvement*. Berkeley, CA and Boulder, CO: University of California and University of Colorado.

Anderson, C. W., Cobb, P., Calabrese Barton, A., Confrey, J., Penuel, W. R., & Schauble, L. (2012). *Learning progressions footprint conference final report*. East Lansing, MI: Michigan State University.

Penuel, W. R., & McGhee, R. (2010). *21st Century Community Learning Centers: Descriptive study of program practices*. Menlo Park, CA: SRI International.

Penuel, W. R., Pasnik, S., Bates, L., Townsend, E., Gallagher, L. P., Llorente, C., et al. (2009). *Preschool teachers can use a media-rich curriculum to prepare low-income children for school success: Results of a randomized controlled trial*. . New York, NY and Menlo Park, CA: Education Development Center, Inc. and SRI International.

- Gallagher, H. A., Penuel, W. R., Murphy, R. F., Bosetti, K. R., Shields, P. M., Toyama, Y., et al. (2009). *National Evaluation of Writing Project professional development: Year 2 report*. Menlo Park, CA: SRI International.
- Penuel, W. R., Ferguson, K., Singleton, C., Shea, S., Borelli, K., & Korbak, C. (2008). *MathForward implementation quality report*. Menlo Park, CA: SRI International.
- Gallagher, H. A., Penuel, W. R., Shields, P. M., & Bosetti, K. R. (2007). *National evaluation of writing professional development: Year 1 report to the National Writing Project (NWP)*. Menlo Park, CA: SRI International.
- Pasnik, S., Strother, S., Schindel, J., Penuel, W. R., & Llorente, C. (2007). *Report to the Ready To Learn initiative: Review of research on media and young children's literacy*. New York, NY and Menlo Park, CA: Education Development Center and SRI International.
- Dynarski, M., Agodini, R., Heaviside, S., Carey, N., Campuzano, L., Means, B., Murphy, R., Penuel, W. R., Javitz, H., Emery, D. K., & Sussex, W. (2007). *Effectiveness of reading and mathematics software products: Findings from the first student cohort*. Washington, DC: Institute of Education Sciences, U.S. Department of Education.
- Penuel, W. R., Frank, K. A., & Sussex, W. (2007). *Report from a workshop: Research exchange on teacher networks*. Menlo Park, CA: SRI International.
- Penuel, W. R., Bienkowski, M., Gallagher, L., Korbak, C., Sussex, W., Yamaguchi, R., Fishman, B. J. (2006). *GLOBE Year 10 evaluation: Into the next generation*. Menlo Park, CA: SRI International.
- Penuel, W. R., Bienkowski, M., Korbak, C., Molina, A., Russo, D., Toyama, Y., et al. (2005). *GLOBE Year 9 evaluation: Implementation supports and student outcomes*. Menlo Park, CA: SRI International.
- Bienkowski, M., Penuel, W., Toyama, Y., Molina, A., Hurst, K., & Peck-Theis, L. (2005). *JASON Academy summative program evaluation: Final report*. Menlo Park, CA: SRI International.

- Penuel, W. R., Roschelle, J., Crawford, V., Shechtman, N., & Abrahamson, A. L. (2004). *Workshop report: Advancing research on the transformative potential of interactive pedagogies and classroom networks*. Menlo Park, CA: SRI International.
- Penuel, W. R., Phillips, M., Toyama, Y., Vahey, P., Hafter, A., & Peck-Theis, L. (2004). *Mathemagica summative program evaluation: Final report*. Menlo Park, CA: SRI International.
- Penuel, W. R., Korbak, C., Yarnall, L., Lewis, A., Toyama, Y., & Zander, M. (2004). *GLOBE Year 8 Evaluation: Understanding diverse implementation contexts*. Menlo Park, CA: SRI International.
- Roschelle, J., Abrahamson, A. L., & Penuel, W. R. (2003). *CATAALYST: Towards scientific studies of the strategic integration of learning theory and classroom network technology to improve teaching and learning*. Menlo Park, CA: SRI International.
- Penuel, W. R., Korbak, C., Lewis, A., Shear, L., Toyama, Y., & Yarnall, L. (2002). *GLOBE Year 7 evaluation: Exploring student research and inquiry in GLOBE*. Menlo Park, CA: SRI International.
- Korbak, C., Penuel, W. R., Kim, D., Cole, K. A., Daniels, M., Gillespie, M., et al. (2002). *Community Technology Centers Program outcome evaluation: Summary of findings from Annual Performance Reports of FY99 and FY00 grantees*. Menlo Park, CA: SRI International.
- Penuel, W. R., Kim, D. Y., Michalchik, V., Lewis, S., Means, B., Murphy, B., et al. (2001). *Using technology to enhance connections between home and school: A research synthesis*. Menlo Park, CA: SRI International.
- Penuel, W. R., Michalchik, V., Daniels, M., Jennings, P., Stites, R., Yarnall, L., Hawkins, K., Pacpaco, R., & Kim, D. Y. (2001). *Community technology centers case study report: Learning with technology in six communities*. Report submitted to the U.S. Department of Education. Menlo Park, CA: SRI International.
- Murphy, R., Penuel, W. R., Means, B., Korbak, C., & Whaley, A. (2001). *E-DESK: A review of recent evidence on the effectiveness of discrete educational software*. Menlo Park, CA: SRI International.

Penuel, W. R., Korbak, C., Daniels, M., Kim, D. Y., Yarnall, L., Hawkins, J., & Pacpaco, R. (2000). *Community technology centers program findings summary: A review of FY99 grantees' annual performance reports*. Report submitted to the U.S. Department of Education. Menlo Park, CA: SRI International.

Penuel, W. R., Golan, S., Means, B., & Korbak, C. (2000). *Silicon Valley Challenge 2000: Year 4 report*. Report submitted to the San Mateo County Office of Education. Menlo Park, CA: SRI International.

## MAGAZINE ARTICLES

Penuel, W. R., Harris, C. J., & DeBarger, A. H. (2015). Implementing the *Next Generation Science Standards*. *Phi Delta Kappan*, 96 (6), 45-49.

Penuel, W. R., (2008). Preparing teachers to teach for deep understanding: A curriculum-based approach. *The Earth Scientist*, 27 (2). 21-24.

Penuel, W. R., & Riel, M. (2007). The new science of networks and the challenge of school change. *Phi Delta Kappan*, 88 (8), 611-615.

Penuel, W. R. (2005). Implementing a handheld program: Lessons from a district-level initiative. *Learning and Leading with Technology*, 32 (6), 2-6.

Roschelle, J., Penuel, W. R., & Abrahamson, A. L. (2004). The networked classroom. *Educational Leadership*, 61 (5), 50-54.

Penuel, W. R., Korbak, C., & Cole, K. A. (2002). Designing assessments for student multimedia projects. *Learning and Leading with Technology*, 29, 46-53.

Penuel, W. R. (2001). Designs for learning: Structuring opportunity in community technology centers. Retrieved June 4, 2004, from <http://www.techsoup.org/howto/articlepage.cfm?ArticleId=331&to picid=12>

Penuel, W. R., Yarnall, L., & Simkins, M. B. (2000, Sept./Oct.). Do technology investments pay off? The evidence is in! *Leadership*, 30(1): 18-19.

Penuel, W. R., Means, B., & Simkins, M. B. (2000). The multimedia challenge. *Educational Leadership*, 58, 34-38.

## BOOK REVIEWS

Penuel, W. R. (in press). Review of *Learning to Improve: How America's Schools Can Get Better at Getting Better*, by Anthony S. Bryk, Louis Gomez, Alicia Grunow, and Paul LeMahieu. *Science Education*.

Penuel, W. R. (2011). Review of *Research and Practice in Education: Building Alliances, Bridging the Divide*, by Cynthia Coburn and Mary Kay Stein. *Teachers College Record*.

Penuel, W. R. (2000). Little faith: A book review of *Ordinary resurrections: Children in the Years of Hope*, by Jonathan Kozol. City Limits. Available online at:  
[www.citylimits.org/content/articles/viewarticle.cfm?article\\_id=2602](http://www.citylimits.org/content/articles/viewarticle.cfm?article_id=2602).

Crawford, V. M., & Penuel, W. R. (1997). Review of *The Dialogical Self. Mind, Culture, and Activity*.

## INVITED PRESENTATIONS

Penuel, W. R. (2016, May). *'Infrastructuring' as a practice for promoting equity and transformation in design-based implementation research*. Invited talk given at the Friday Institute for Educational Innovation, Raleigh, NC.

Penuel, W. R. (2016, April). *Getting to scale with equitable teaching and learning*. Presidential Session at the American Educational Research Association Meeting, Washington, DC.

Penuel, W. R., Bell, P. L., Briggs, D. C., Buffington, P. J., Coburn, C. E., Farley-Ripple, E. N., Hill, H. C., May, H., & Spillane, J. P. (2016, April). *Reconceptualizing how we study and support research use*.

Invited Panel at the American Educational Research Association Meeting, Washington, DC.

Penuel, W. R. (2015, October). *Getting to scale with new visions of teaching and learning*. Paper presented at the Using Continuous Improvement to Integrating Design, Implementation, and Scale Up, Nashville, TN.

Penuel, W. R. (2015, September). *'Infrastructuring' as a practice for promoting equity and transformation in design-based implementation research*. Paper presented at the International Society for Design and Development in Education (ISDDE) 15, Boulder, CO.

Penuel, W. R. (2015, May). *Design-Based Implementation Research: An introductory workshop*. Presentation given at the University of Girona. Girona, Catalonia, Spain: University of Girona.

Penuel, W. R., & Martin, C. (2015, April). *Design-Based Implementation Research as a strategy for expanding opportunity to learn in school districts*. Invited presentation to the Research Conference of the National Council of Teachers of Mathematics, Boston, MA.

Penuel, W. R. (2014, December). *Getting to scale and sustainability with design-based implementation research*. Invited presentation to Board on Science Education, National Academies, Irvine, CA.

Penuel, W. R. (2014, December). *Preparing teachers to support three-dimensional science learning*. Invited presentation at "Sharing the Adventure with the Student: Exploring the Intersections of NASA Space Science and Education, A Workshop." National Academy of Sciences, Washington, DC.

Penuel, W. R. (2014, November). *Developing assessments for the Next Generation Science Standards*. Invited presentation and workshop for the Colorado Front Range Science Supervisors, Denver, CO.

Penuel, W. R., Shea, M. V., Frost, F., & Gallagher, D. (2014, October). *Strategies for negotiating problems of practice with partners*. Invited presentation to the Math-Science Partnership Conference, Washington, DC.



- Penuel, W. R. (2014, October). *Assessment and the Next Generation Science Standards*. Invited presentation and workshop for the Colorado Science Education Network, Boulder, CO.
- Penuel, W. R. (2014, September). *Supporting instructional shifts in the Next Generation Science Standards*. Invited presentation and workshop for the Colorado Front Range Science Supervisors, Denver, CO.
- Penuel, W. R., \*Heredia, S., Rigby, J., & Russell, J. (2014, August). *Fidelity and beyond: Developing and using implementation evidence in research and development projects*. Invited symposium at the National Science Foundation's DRK-12 Principal Investigators Meeting.
- Penuel, W. R. (2014, June). *Research-based models for professional development*. Invited presentation to Building State Capacity in State Science Education Meeting, Denver, CO.
- Shouse, A., & Penuel, W. R. (2014, June). *Adapting instructional models to NGSS practices: What needs to be done to reach all learners?* Invited presentation to Building State Capacity in State Science Education Meeting, Denver, CO.
- Penuel, W. R., & McLaren, P. (2014, April). *Developing assessments of science proficiency: Recommendations of NRC Report*. Invited presentation to Council of State Science Supervisors Annual Conference, Boston, MA.
- Penuel, W. R. (2014, February). *Studying and supporting interest development*. Invited presentation as part of CREATE speaker series, Michigan State University, East Lansing, MI.
- Penuel, W. R., Falk, J., & Dierking, L. (2013, December). *The Synergies Agent-Based Model: Preliminary work, challenges and opportunities*. Invited presentation to the Seoul National University, Seoul, South Korea.
- Penuel, W. R., & Fishman, B. J. (2013, November). *Design-Based Implementation Research: Working in partnership to transform the relation of research and practice*. Webinar presented through MSP Net to the NSF Math and Science Partnership community.

- Penuel, W. R. (2013, October). *Developing and using implementation evidence in research and development efforts*. National Science Foundation, Washington, DC.
- Penuel, W. R. (2013, September). *Improving implementation of innovative teaching practices: From fidelity to principled adaptation of curricula*. Invited presentation at the University of Twente, the Netherlands.
- DeBarger, W. R., Penuel, W. R., & Harris, C. H. (2013, September). *Designing NGSS assessments to evaluate the efficacy of curriculum interventions*. Invited presentation for the Joint meeting of the Council of Chief State School Officers and the State Collaborative on Assessment and Student Standards, Washington, DC.
- Penuel, W. R. (2013, August). *Introduction to the Next Generation Science Standards*. Invited presentation to the Boulder Valley School District, Boulder, CO.
- Penuel, W. R. (2013, August). *Designing for change in complex educational systems*. Invited presentation to Waterbury Summit, Pennsylvania State University, State College, PA.
- Penuel, W. R. (2013, July). *Design-Based Implementation Research: Working in partnership(s) to transform the relation of research and practice*. Paper presented at the Maine Physical Science Partnership, University of Maine, Bangor, ME.
- Penuel, W. R., & Fishman, B. J. (2013, May). *Design-Based Implementation Research: Working in partnership to transform the relation of research and practice*. Presentation to the Northwestern University Multidisciplinary Program in Education Sciences, Evanston, IL.
- Penuel, W. R. (2013, April). *Research, development, and assessment with badges: An equity and diversity perspective*. Presentation at the STEM Badges: Current Terrain and Beyond Meeting, National Science Foundation, Arlington, Virginia.

Penuel, W. R. (2013, March). *Digital media and learning in early childhood*. Invited presentation to the National Center for Quality Teaching and Learning, University of Washington, Seattle, WA.

Penuel, W. R. (2012, September). *Planning for change: Issues of implementation and scale*. Keynote address presented at the Nevada STEM Smart Workshop, Las Vegas, NV.

Penuel, W. R. (2009, January). *Organizing, leading, and sustaining innovation in professional learning communities*. Keynote address presented at the Microsoft Innovative Schools Conference, London, England.

## SELECTED RECENT PRESENTATIONS

D'Angelo, C., Moorthy, S., \*Allen, C. D., Harris, C. D., Penuel, W. R. (2016, April). *Exploring variation in curriculum implementation through data visualization of teacher talk*. Paper presented at the 2016 NARST International Conference, Baltimore, MD.

\*Severance, S., Penuel, W. R., Manz, E. I., & Leary, H. A. (2016, April). *Teacher learning of modeling practices in the NGSS across professional development and classroom settings*. Paper presented at the 2016 NARST International Conference, Baltimore, MD.

Pinkard, N., Penuel, W. R., \*Dibie, O., \*Sultan, A. M., \*Quigley, D., Sumner, T., Van Horne, K., Acholonu, U. (2016, April). *Mapping and modeling the abundance, diversity, and accessibility of summer learning opportunities at the scale of a city*. Paper presented at the American Educational Research Association Annual Meeting, Washington, D. C.

Penuel, W. R., \*Severance, S., Reiser, B. J., Kincaid, P., Miller, J., Yacoubian, J., Martin, C., & Leary, H. (2015, April). *Curriculum co-design as a strategy for supporting equitable implementation of Next Generation Science Standards*. Paper to be presented at the Annual Meeting of the American Educational Research Association, Chicago, IL.

Penuel, W. R., Falk, J., Dierking, L., Hendry, M., Harrison, J., & Staus, N. (2015, April). *Using agent-based modeling to gain insight into interest*

*development*. Paper to be presented at the Annual Meeting of the American Educational Research Association, Chicago, IL.

Penuel, W. R., Harris, C. J., D'Angelo, C., Gallagher, L. P., Cheng, B. H., Moorthy, S., & Krajcik, J. (2015, April). *Supporting next generation science teaching and learning with curriculum materials: Results from an efficacy study*. Paper to be presented at NARST Annual Conference, Chicago, IL.

\*Cafarella, J., Penuel, W. R., Staus, N., \*Wyld, J., \*Bailey, D., Dierking, L., & Falk, J. (2015, April). *Investigating complementary approaches to measuring interest in science*. Paper to be presented at NARST Annual Conference, Chicago, IL.

\*Cartun, A., & Penuel, W. R. (2015, April). *Youth voices on sponsorship of literacy in an emerging participatory culture in a school setting*. Paper to be presented at the Annual Meeting of the American Educational Research Association, Chicago, IL.

\*Severance, S., \*Allen, C., & Penuel, W. R. (2015, April). *Leveraging professional development to design and enact NGSS-aligned materials in uncertain policy contexts*. Paper to be presented at NARST Annual Conference, Chicago, IL.

Penuel, W. R., Bevan, B., Bell, P., Buffington, P., & Falk, J. (2014, April). *Using social network concepts to enhance research use in planning for educational change*. Paper presented in Presidential Session of the Annual Meeting of the American Educational Research Association, Philadelphia, PA.

Penuel, W. R., & Otero, V. (2014, April). *Design-Based Implementation Research for improving undergraduate STEM education*. Paper presented in Presidential Session of the Annual Meeting of the American Educational Research Association, Philadelphia, PA.

Maul, A., Penuel, W. R., \*Dadey, N., Gallagher, L. P., Podkul, T., & Sauerteig, D. (2014, April). *Emerging validity evidence for a survey measure of connected learning*. Paper presented at the Annual Meeting of the American Educational Research Association, Philadelphia, PA.

\*Allen, C., Penuel, W. R., & D'Angelo, C. (2014, March). *Beyond content and standards knowledge: Examining systemic coherence through teacher sensemaking for the successful implementation of the Next Generation Science Standards*. Paper presented at the NARST Annual Meeting, Pittsburgh, PA.

Penuel, W. R. (2013, April). *The change laboratory as a method of design-based research*. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA.

Penuel, W. R. (2013, April). *Theorizing science learning in practice*. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA.

Penuel, W. R., Llorente, C., Van Brunt, J., & Drummond, M. (2013, April). *Synthesis of recent literature on technology and media for early literacy learning*. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA.

Penuel, W. R., Sun, M., Frank, K. A., & Gallagher, H. A. (2013, April). *Using social network analysis to study how collegial interactions can augment teacher learning from external professional development*. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA.

Penuel, W. R., DeBarger, A., Kim, C. B., Moorthy, S., Beauvineau, Y., Kennedy, C. A., . . . \*Allison, K. (2013, April). *Improving learning by improving classroom assessment in Earth science: Findings from the Contingent Pedagogies project*. Paper presented at the Annual Meeting of the National Association for Research in Science Teaching, San Juan, PR.

Penuel, W. R., \*York, A. J., Kirshner, B., Falk, J. H., Dierking, L. D., Haun-Frank, J., . . . \*Bailey, D. (2012, April). *Youth participatory research as a boundary practice in place-based partnerships for expanding learning opportunities in communities*. Paper presented at the Annual Meeting of the American Educational Research Association, Vancouver, BC.

Penuel, W. R., & Means, B. (2010, November). *Using large-scale databases in evaluation: Advances, opportunities, and challenges*. Paper

presented at the Annual Meeting of the American Evaluation Association, San Antonio, TX.

Penuel, W. R. (2010, October). *Leveraging student interest and choice in designs for STEM learning in formal and informal contexts*. Paper presented at the Principal Investigators Meeting of the National Science Foundation's Science of Learning Centers, Arlington, VA.

Stevens, R., & Penuel, W. R. (2010, October). *Studying and fostering learning through joint media engagement*. Paper presented at the Principal Investigators Meeting of the National Science Foundation's Science of Learning Centers, Arlington, VA.

Penuel, W. R. (2010, September). *The role of intra-organizational processes in mediating institutional diffusion*. Paper presented as part of the IES Lecture Series at the University of Pennsylvania, Philadelphia, PA.

Penuel, W. R., Frank, K. A., Sun, M., Kim, C., & Singleton, C. (2010, August). *The role of intra-organizational processes in mediating institutional diffusion*. Paper presented at the Annual Meeting of the American Sociological Association, Atlanta, GA.

Penuel, W. R., Cheng, B., Harris, C. J., & Phillips, R. (2010, April). *Translating design principles into practice: A comparative case study of three design-based research projects in the LIFE Center*. Paper presented at the Annual Meeting of the American Educational Research Association, Denver, CO.

Penuel, W. R., Bates, L., Townsend, E., Gallagher, L. P., Pasknik, S., & Llorente, C. (2010, March). *A media-rich curriculum for improving early literacy outcomes of low-income children: Evaluation results for the Ready to Learn Initiative*. Paper presented at the Annual Conference of the Society for Research on Effectiveness in Education, Washington, DC.

\*Phillips, R. S., Harris, C. J., Penuel, W. R., & Cheng, B. (2010, March). *Teachers managing students' ideas, questions, and contributions in the context of an innovative inquiry-based elementary science unit*. Paper presented at the Annual Meeting of the National Association for Research in Science Teaching, Philadelphia, PA.

- Gallagher, L. & Penuel, W. R. (2009, April). *Preparing teachers to design instruction in middle school Earth science: Impacts of three professional development programs on student learning*. Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA.
- Penuel, W. R. (2009, April). *Evaluating the DELTA Project*. Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA.
- O'Connor, K., & Penuel, W. R. (2009, April). *Organizing as a metaphor for learning and research on learning*. Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA.
- Fishman, B. J., Penuel, W. R., Hegedus, S. J., Tatar, D., Dickey, M., Moniz, R., et al. (2009, April). *What happens when the research ends? Factors related to the sustainability and scalability of a research-based innovation*. Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA.
- Penuel, W. R. (2009, January). *Organizing, leading, and sustaining innovation in professional learning communities*. Keynote Presentation at the Microsoft Innovative Schools Conference, London, England.
- Fishman, B. J., Penuel, W. R., Gallagher, L. P., Lopez-Prado, B., & Korbak, C. (2008, June). *The mediating role of coherence in curriculum implementation*. Paper presented at the 8th International Conference of the Learning Sciences, Utrecht, the Netherlands.
- Rafanan, K., Roschelle, J., Bhanot, R., Gorges, T., & Penuel, W. R. (2008, June). *Measuring mathematics discourse in technology-supported collaborative activities*. Paper presented at the 8th International Conference of the Learning Sciences, Utrecht, the Netherlands.
- Penuel, W. R., & Gallagher, L. P. (2008, March). *Comparing three approaches to preparing teachers to teach for deep understanding in Earth science: Short-term impacts on teachers' instructional planning and practice*. Paper presented at the Annual Meeting of the American Educational Research Association, New York, NY.

- Penuel, W. R., McWilliams, H., & McAuliffe, C. (2007, December). *Investigating the role of the teacher in science curriculum: New evidence for an old debate*. Paper presented at the American Geophysical Union Fall Meeting 2007, San Francisco, CA.
- Penuel, W. R., Riel, M., Frank, K. A., & Krause, A. (2007, April). *Teacher networks and the diffusion of innovations*. Paper presented at the 4th Lake Arrowhead Conference on Human Complex Systems, Lake Arrowhead, CA.
- \*Joshi, A., & Penuel, W. R. (2007, April). *The role of institutionalized norms of autonomy and equality in shaping interactions of teachers*. Paper presented at the 4th Lake Arrowhead Conference on Human Complex Systems, Lake Arrowhead, CA.
- Penuel, W. R., Riel, M., & Sussex, W. (2007, April). *A network perspective on teacher collaboration: Teachers' social capital and the enactment of curricular reforms*. Paper presented at the American Educational Research Association Annual Meeting, Chicago, IL.
- Penuel, W. R., Frank, K. A., & Krause, A. (2007, April). *A social network approach to examining the effects of distributed leadership in schoolwide reform initiatives*. Paper presented at the American Educational Research Association Annual Meeting, Chicago, IL.
- Penuel, W. R., Frank, K. A., & Riel, M. (2007, February). *Instructional change and improved achievement: The significance of the internal social structure of schools*. Paper presented at the Conference on Human and Social Capital in Learning Systems, Pittsburgh, PA.
- Penuel, W. R., Kreikemeier, P., Venezky, D. Y., Blank, J. G., Davatzes, A. E. K., & Davatzes, N. C. (2006, December). *Assessing teachers' comprehension of what matters in Earth science*. Paper presented at the American Geophysical Union Fall Meeting 2006, San Francisco, CA.
- Penuel, W. R., Sussex, W., & Korbak, C. (2005, October). *Mapping the distribution of expertise and resources in a school: A social capital approach to evaluating school capacity*. Paper presented at the Joint



Conference of the Canadian Evaluation Society and the American Evaluation Association, Toronto, Ontario.

Penuel, W. R., & Sussex, W. (2005, August). *GLOBE Year 10 evaluation results*. Paper presented at the 10th Annual GLOBE Conference, Prague, Czech Republic.

Penuel, W. R., Riel, M., Korbak, C., & Means, B. (2004, April). *Investigation of a social capital approach to the adoption of reform practices*. Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA.

Penuel, W. R., Shear, L., Korbak, C., & Sparrow, E. (2004, April). *The roles of regional partners in supporting an international science inquiry program*. Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA.

Yarnall, L., & Penuel, W. R. (2004, April). *Designing handheld software to support classroom assessment*. Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA.

Penuel, W. R., & Means, B. (2004, February). *The effectiveness of technology-supported science education: Studying what works how, when, and for whom*. Paper presented at the Annual Meeting of the American Association for the Advancement of Science, Seattle, WA.

## RECORD OF EXTERNAL FUNDING FOR RESEARCH

### *As Principal Investigator or Project Director*

2014-2018	“National Center for Research in Policy and Practice” \$4,995,000 Funder: Institute of Education Sciences, National Science Foundation
2012-2017	“Connected Learning Research Network Survey Study” \$729,295 Funder: MacArthur Foundation

- 2011-2012 “Developing and Testing Theories of Implementation: A Workshop on Design Research with Educational Systems”  
\$184,779  
Funder: REESE Program, National Science Foundation
- 2010-2015 “Evaluation of the Ready to Learn Content Alliance”  
\$4,874,999  
Funder: Office of Innovation and Improvement, U.S. Department of Education
- 2008-2012 “Developing Contingent Pedagogies: Integrating Technology-Enhanced Feedback into a Middle School Science Curriculum to Improve Conceptual Teaching and Learning”  
\$2,199,970  
Funder: DRK-12 Program, National Science Foundation
- 2007-2009 “Evaluation of the MathForward Initiative”  
\$728,000  
Funder: Texas Instruments, Inc.
- 2006-2010 “Evaluation of the Ready to Learn Initiative”  
\$2,070,000  
Funder: Office of Innovation and Improvement, U.S. Department of Education
- 2006-2009 “Analyzing the Flow of Network-Embedded Expertise in Schools: A Longitudinal Study of Individual and Organizational Change”  
\$551,484  
Funder: Human and Social Dynamics Program, National Science Foundation
- 2005-2009 “Comparing the Efficacy of Three Approaches to Transforming Instruction in Earth Science Education”

	\$1,864,415 Funder: Institute of Education Sciences, U.S. Department of Education
2004-2008	“21 <sup>st</sup> Century Community Learning Centers Program Implementation Study” \$1,642,462 Funder: Program and Policy Studies Service, U.S. Department of Education
2003-2007	“Evaluation of the Global Learning to Benefit the Environment (GLOBE) Program: A Systemic Approach.” \$910,659 Funder: Elementary, Secondary, and Informal Education, National Science Foundation
2003-2007	“Exploration of a Social Capital Framework for Evaluative Studies of Technology Integration” \$1,346,733 Funder: ROLE, National Science Foundation
2003-2005	“Evaluation of the <i>Routes to Learning</i> Initiative” \$75,000 Funder: Koret Foundation
2002-2005	“Handheld Assessment: Portable Scaffolds for Project-based Learning in Science?” \$ 1,822,042 Funder: ROLE, National Science Foundation

*As Co-Principal Investigator*

2015-2017	“Curriculum Units That Exemplify Three Dimensional Learning and Assessment” \$ 834,528 Funder: Gordon & Betty Moore Foundation
2013-2017	“A Research+Practice Collaboratory” \$1,441,305

	Funder: National Science Foundation
2012-2015	“INDP: Inquiry Hub” \$1,520,531 Funder: National Science Foundation
2012-2015	“From Users to Coproducers of Research Evidence: A Study of Place-Based Research Partnerships” \$591,901 Funder: William T. Grant Foundation
2011-2015	“Synergies: Understanding and Connecting STEM Learning in the Community” \$601,177 Funder: Noyce Foundation
2010-2015	“Efficacy Trial of Project Based Inquiry Science” \$5,000,000 Funder: National Science Foundation
2006-2011	“Evaluation of the National Writing Project” \$5,000,000 Funder: U.S. Department of Education
2003-2005	“The CATAALYST - Planning a Rigorous Study” \$231,607 Funder: National Science Foundation

## PATENTS

*Method and Apparatus for Group Learning via Sequential Explanation  
Templates*  
US8092227 B2  
January 10, 2012

## EXTERNAL PROFESSIONAL SERVICE

2014-present	Review panel member, Institute of Education
--------------	---

	Sciences, <i>Research-Practice Partnerships Program</i>
2012-present	Advisory board member, Building Capacity for State Science Education Initiative, Council of State Science Supervisors
2011-present	Regular reviewer, <i>Mind, Culture, Activity</i>
2011-present	Regular reviewer, <i>Harvard Educational Press</i>
2010-present	Editorial Board Member, <i>American Journal of Evaluation</i>
2008-present	Editorial Board Member, <i>Cognition &amp; Instruction</i>
2007-present	Editorial Board Member, <i>Teachers College Record</i>
2007-present	Regular reviewer, <i>Sociology of Education</i>
2006-present	Editorial Board Member, <i>Educational Technology Research and Development</i>
2014	Ad hoc Reviewer, <i>Ecology &amp; Society, Educational Researcher, Instructional Science, Journal of Educational Change, Journal of Policy Analysis and Management, Journal of Teacher Education, Journal of Applied Developmental Psychology</i>
2014	Reviewer, National Science Foundation DRK-12 program
2012-2014	Conference co-chair, 11 <sup>th</sup> International Conference of the Learning Sciences
2012-2013	Member, National Research Council committee on Assessment and the Next Generation Science Standards
2011-2013	Member, Geographical Sciences Education Research Committee

2011-2013	Associate Editor, <i>American Educational Research Journal</i>
2011-2013	Member, Geographical Sciences Education Research Committee
2011-2013	Associate Editor, <i>American Educational Research Journal</i>
2009-2012	Regular reviewer, <i>Elementary School Journal</i>
2008	Reviewer, Informal Science Education Program (NSF)
2006	Reviewer, Human and Social Dynamics Program (NSF)
2005-2011	Reviewer, <i>Science Education</i>
2004	Reviewer, SBIR program (NSF)
2003	Reviewer, ROLE program (NSF)
1996-2000	Reviewer, <i>Journal of Research on the Teaching of English</i>
1995-1997	Vice President, Cultural-Historical SIG of the American Educational Research Association

## MEMBERSHIPS

American Educational Research Association  
 International Society of the Learning Sciences  
 National Association for Research in Science Teaching  
 National Science Teachers Association

## STUDENTS

*Current Doctoral Candidates (chair or co-chair)*  
 Carrie D. Allen, University of Colorado Boulder  
 Sam Severance, University of Colorado Boulder

*Past Students (chair or co-chair)*

Heather MacGillivray, University of Colorado Boulder (Ph.D., 2014)

Chad Nash, University of Colorado Boulder (Ph.D., 2015)