

## Curriculum Vitae

*Abbreviated, public version*

### Vanessa Svihla, Ph.D.

Organization, Information & Learning Sciences  
College of University Libraries & Learning Sciences  
MSC 05 3020

&

Chemical & Biological Engineering  
School of Engineering

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### Academic background

Ph.D., The University of Texas at Austin, Science Education, 2009.

- Dissertation: How differences in interaction affect learning and development of design expertise in the context of biomedical engineering design.

M.S., Geological Sciences, The University of Texas at Austin, 2003.

- Thesis: Structural evolution of the east central Big Maria Mountains, Maria fold and thrust belt, southeastern California.

B.A., Geology and Russian, Smith College, 1997.

- Sophomore year abroad in Odessa, Ukraine, Одесский государственный университет.

### Research interests

As a learning scientist, my research investigates learning as a dynamic and power-laden process, generally answering the following broad questions, commonly in design and engineering settings:

- How do learners develop the capacity to frame design problems, and especially in ways that are just, ethical, empathetic, and creative?
- Under what conditions do authentic, ill-structured learning experiences foster belonging, commitment, and agency, and especially for learners from minoritized groups in STEM?
- In what ways can an asset-based, teaching-as-design, and intersectional power-informed approach shift pedagogy and contribute to organizational change?
- What measures and assessments provide just and valid information about learning and development in such endeavors?

## Professional experience

Special Assistant to the Dean for Learning Sciences, School of Engineering, The University of New Mexico, Spring 2019-current.

Associate Professor, The University of New Mexico, Organization, Information & Learning Sciences, Fall 2018-current.

Acting Program Director, The University of New Mexico, Organization, Information & Learning Sciences, Fall 2019.

Assistant Professor, The University of New Mexico, Organization, Information & Learning Sciences, Fall 2014-Spring 2018.

### Courses taught and developed

	<i>Course name (3 credits unless noted)</i>	<i>Semesters taught</i>
<i>OILS</i>	<i>Standard courses developed/taught as primary load</i>	
418**°	Creativity in the Wild (1)	<i>Approved for 2022-2023 catalog</i>
419**°	Framing Wicked Problems (2)	<i>Approved for 2022-2023 catalog</i>
420*°§	Creativity & Technical Design	Sp 2017, Sp 2018, Sp 2019
543*°§	Instructional Design	Fa 2014, Fa 2015, Fa 2016, Sp 2017, Fa 2022
546**°	Framing Designs for Learning (2)	<i>Approved for 2017-2018 catalog</i> Fa 2017, Sp 2018, Sp 2021, Fa 2021
547**°	Prototyping Designs for Learning (1)	<i>Approved for 2017-2018 catalog</i> Fa 2017, Sp 2018, Sp 2021, Fa 2021
601*°§	Advanced Instructional Design	Fa 2014, Fa 2016, Fa 2018, Fa 2019, Sp 2022
604**°§	Design-Based Research	Fa 2015, Fa 2017, Fa 2019, Fa 2021
690*§	Dissertation Proposal Seminar	Sp 2019
<i>*I significantly redesigned the course; **I developed as a new course; °Online; §Face-to-face/hybrid</i>		
<i>Topics, Problems, &amp; Directed Readings courses taught as overload</i>		
698	Designing Qualitative Research in Global Health	Sp 2022
598	Interdisciplinary Design Instruction	Su 2021
598	Power Dynamics in Faculty Development	Su 2021
698	Interorganizational Network Innovation	Fa 2020, Sp 2021
693	Advanced Qualitative Analysis	Sp 2018
698	Computer Education Research	Fa 2018
591	K-12 Engineering Education Research	Fa 2016
698	Conducting Qualitative Research on Engineering Learning	Fa 2016
598	Grant Writing for Studying Literacy Learning	Fa 2014
598	Instructional Design for Teaching Water Resources	Fa 2014

Associate Professor, The University of New Mexico, Chemical & Biological Engineering, Spring 2016-current.

Courses taught and developed

	<i>Course name (1 credit unless noted)</i>	<i>Semesters taught</i>
CBE	<i>Standard courses developed/taught as primary load</i>	
102**	Addressing Societal Challenges using the Tools of Chemical & Biological Engineering	<i>Approved for 2022-2023 catalog</i>
101*	Introduction to Chemical Engineering and Biological Engineering	<i>(co-instructor) Sp 2017, Fa 2017, Sp 2018, Fa 2018, Sp 2019, Fa 2019</i>

*\*I significantly redesigned the course; \*\*I developed as a new course*

Evaluator, Academic Science Education and Research Training (ASERT) Program, NIH-funded program at UNM. Spring 2015-2020.

Assistant Professor, The University of New Mexico, Teacher Education, Educational Leadership & Policy, Fall 2011-Spring 2014.

Post Doctoral Scholar, Graduate School of Education, The University of California, Berkeley, *Cumulative Learning using Embedded Assessment Results* (CLEAR, NSF #0822388). Summer 2009-Summer 2011. Mentor: Marcia Linn

## Scholarship

Edited books, published (4)

Bishop, M.J., Boling, E., Elan, J., & Svihla, V. (Eds.). (6/2020). *Handbook of research for educational communications and technology* (5<sup>th</sup> Edition). Association for Educational Communications and Technology. Springer.

Ruecker, T. & Svihla, V. (Eds.). (6/2019). *Navigating challenges in qualitative educational research: Research, interrupted*. New York, NY: Routledge.

Svihla, V. & Reeve, R. (Eds.). (2/2016). *Design as scholarship: Case studies from the learning sciences*. New York, NY: Routledge.

Petrosino, A, Martin, T., and Svihla, V. (Eds.). (2007). *Developing student expertise and community: Lessons from how people learn*. New directions in teaching and learning series. (Vol. 108). San Francisco: Jossey-Bass.

Peer reviewed articles, published (32)

**Online** Chow-Garcia, N., Lee, N., Svihla, V., Sohn, C., Willie, S., Holsti, M., & Wandinger-Ness, A. (online first, 1/2022). Cultural identity central to Native American persistence in science. *Cultural Studies of Science Education*. <https://doi.org/10.1007/s11422-021-10071-7>

**2022** Svihla, V., Chen, Y., & Kang, S.P. (4/2022). A funds of knowledge approach to developing engineering students' design problem framing skills. *Journal of Engineering Education*, 111(2), 308-337. <https://doi.org/10.1002/jee.20445>

Kang, S. P., Chen, Y., Svihla, V., Gallup, A., Ferris, K., & Datye, A. K. (2/2022). Guiding change in higher education: An emergent, iterative application of Kotter's change model. *Studies in Higher Education*, 47(2), 270-289. <https://doi.org/10.1080/03075079.2020.1741540>

- Svihla, V.**, & Kachelmeier, L. (2/2022). Latent value in humiliation: A design thinking tool to enhance empathy in creative ideation. *International Journal of Design Creativity and Innovation*, 10(1), 51-68. <https://doi.org/10.1080/21650349.2021.1976677>
- Chen, Y., Kang, S.P., James, J.O., Chi, E., Gomez, J.R., Han, S.M., Datye, A.K., & **Svihla, V.** (1/2022). Leveraging students' funds of knowledge in chemical engineering design challenges supports persistence intentions. *Journal of Chemical Education*, 99(1), 83-91, <https://doi.org/10.1021/acs.jchemed.1c00479>
- 2021 Svihla, V.**, Peele-Eady, T.B., & Gallup, A. (12/2021). Exploring agency in capstone design problem framing. *Studies in Engineering Education*, 2(2), 96-119, <https://doi.org/10.21061/see.69>
- Cole Harmon, R., Hospelhorn, M., Gutierrez, E., Velarde, C., Fetrow, M., & **Svihla, V.** (4/2021). Mission to Mars amidst a pandemic. *International Journal of Designs for Learning*, 12(1), 158-170, <https://doi.org/10.14434/ijdl.v12i1.31295>.
- Gravel, B.E. & **Svihla, V.** (4/2021). Fostering heterogeneous engineering through whole-class design work. *The Journal of the Learning Sciences*, 30(2), 279-329, <https://doi.org/10.1080/10508406.2020.1843465>
- Svihla, V.**, & Gallup, A. (3/2021). Do loss aversion and the ownership effect bias content validation procedures? *Practical Assessment, Research, and Evaluation*, 26(7), 1-12, <https://doi.org/10.7275/34d8-qe13>
- 2020 Pierard, C.**, Svihla, V., Clement, S., & Fazio, B.-S. (3/2020). Undesirable difficulties: Investigating barriers to students' learning with Ebooks in a semester-length course. *College & Research Libraries*, 81(1), 170-192, <https://doi.org/10.5860/crl.81.2.170>
- 2019 Svihla, V.**, Kubik, T., & Stephens-Shauger, T. (10/2019). Performance assessment practice as professional learning. *Interdisciplinary Journal of Problem-Based Learning*, 13(2), <https://docs.lib.purdue.edu/ijpbl/vol13/iss2/2/>
- Gomez, J.R. & **Svihla, V.** (4/2019). Building individual accountability through consensus. *Chemical Engineering Education*, 53(2), 71-79, <https://journals.flvc.org/cee/article/view/106541> **Best paper of the year.**
- 2018 Svihla, V.**, Wester, M., & Linn, M. C. (10/2018). Distributed practice in classroom inquiry science learning. *Learning: Research and Practice*, 4(2), 180-202, <https://doi.org/10.1080/23735082.2017.1371321>
- Gallup, A., Tomasson, J., & **Svihla, V.** (6/2018). Empowerment and constraint: Design of a homecare worker training program. *International Journal of Designs for Learning*, 9(1), 149-157, <https://doi.org/10.14434/ijdl.v9i1.23459>
- Lee, N., Nelson, A., & **Svihla, V.** (6/2018). Refining a summer biomedical research training program for American Indian and Alaska Native (AIAN) students. *International Journal of Designs for Learning*, 9(1), 88-97, <https://doi.org/10.14434/ijdl.v9i1.23049>
- Gomez, J.R. & **Svihla, V.** (4/2018). Rurality as an asset for inclusive teaching in chemical engineering. *Chemical Engineering Education*, 52(2), 99-106, <https://journals.flvc.org/cee/article/view/105855>
- 2017 Thomas, R.** & **Svihla, V.** (8/2017). Changing student conceptions of arid, urban watershed management. *Journal of Contemporary Water Research and Education*, 161(1), 92-104. <https://doi.org/10.1111/j.1936-704X.2017.3254.x>
- 2016 Svihla, V.** & Reeve, R., (10/2016). Facilitating problem framing in project-based learning. *Interdisciplinary Journal of Problem-Based Learning*, 10(2), <https://doi.org/10.7771/1541-5015.1603> **5th most downloaded paper, 12/2016.**

- McKay, T., Jimenez, E.Y., **Svihla, V.**, Castillo, T., Cantarero, A. (9/2016). Teaching professional practice: Using Interactive Learning Assessments to simulate the nutrition care process (NCP). *Topics in Clinical Nutrition*, 31(3), 257-266.  
<https://doi.org/10.1097/TIN.0000000000000079>
- Svihla, V.**, Reeve, R., Collins, J., Lane, W., Field, J., Stiles, A., (2/2016). Framing, reframing & teaching: design decisions before, during and within a project-based unit. *International Journal of Designs for Learning*, 7(1), 19-36,  
<https://doi.org/10.14434/ijdl.v7i1.19427>
- 2015 **Svihla, V.**, Wester, M., & Linn, M. C. (12/2015). Revisiting: An analytic for retention of coherent science learning. *Journal of Learning Analytics*, 2(2), 74-100,  
<https://doi.org/10.18608/jla.2015.22.7>
- Crayton, J., & Svihla, V. (9/2015). Designing for immersive technology: Integrating art and STEM learning. *The STEAM Journal*, 2(1), 1-9,  
<https://doi.org/10.5642/steam.20150201.8>
- Svihla, V.**, Reeve, R., Sagy, O., & Kali, Y. (4/2015). A fingerprint pattern of supports for teachers' designing of technology-enhanced learning. *Instructional Science*, 43(2), 283-307,  
<https://doi.org/10.1007/s11251-014-9342-5>
- Liu, L., Ryoo, K., Sato, E., **Svihla, V.**, & Linn, M.C. (3/2015). Measuring knowledge integration learning of energy topics: A two-year longitudinal study. *International Journal of Science Education*, 37(7), 1044-1066, <https://doi.org/10.1080/09500693.2015.1016470>
- 2014 **Svihla, V.** (12/2014) Advances in design-based research in the learning sciences. *Frontline Learning Research*, 2(4), 35-45, <https://doi.org/10.14786/flr.v2i4.114>
- 2013 Boyle, J. D., **Svihla, V.**, Tyson, K., Bowers, H., Buntjer, J., Garcia-Olp, M., Kvam, N., & Sample, S. (10/2013). Preparing teachers for new standards: from content in core disciplines to disciplinary practices. *Teacher Education & Practice*, 26(2), 199-220,  
<https://eric.ed.gov/?id=EJ1044775/>  
[https://www.academia.edu/download/55162769/Preparing\\_teachers\\_for\\_new\\_standards\\_fro.pdf](https://www.academia.edu/download/55162769/Preparing_teachers_for_new_standards_fro.pdf)
- 2012 **Svihla, V.**, Petrosino, A. J., & Diller, K. (7/2012). Learning to design: Authenticity, problem posing and problem solving. *International Journal of Engineering Education*, 28(4), 1-17. <http://sites.utexas.edu/texas-bmes/files/2015/07/2012-Learning-to-Design-Authenticity-Negotiation-and-Innovation.pdf>
- Svihla, V.**, & Linn, M. C. (7/2012). A design-based approach to fostering understanding of global climate change. *International Journal of Science Education*, 34(5), 651-676.  
<https://doi.org/10.1080/09500693.2011.597453>
- Martin, T., **Svihla, V.**, & Petrick Smith, C. (5/2012). The role of physical action in fraction learning. *Journal of Education & Human Development*, 5(1), 1-17. [[Link](#)]
- 2010 **Svihla, V.** (9/2010) Collaboration as a dimension of design innovation. *Journal of CoDesign: International Journal of CoCreation in Design and the Arts*, 6(4), 245-262.  
<https://doi.org/10.1080/15710882.2010.533186>
- 2009 **Svihla, V.**, Petrosino, A. J., Martin, T., & Diller, K. R. (7/2009). Learning to design: Interactions that promote innovation. In W. Aung, K.-S. Kim, J. Mecsi, J. Moscinski & I. Rouse (Eds.), *Innovations 2009: World Innovations in Engineering Education and Research*, 375-391.  
[https://www.academia.edu/290336/Learning\\_to\\_Design\\_Interactions\\_That\\_Promote\\_Innovation](https://www.academia.edu/290336/Learning_to_Design_Interactions_That_Promote_Innovation)

Weusijana, B. K. A., **Svihla, V.**, Gawel, D. J., & Bransford, J. D. (2/2009). MUVes and experiential learning: Some examples. *Innovate: Journal of Online Education*, 5(5).  
<https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.631.6999&rep=rep1&type=pdf>

Peer Reviewed Proceedings, Published (77)

The following are abbreviated in citations below:

- *International Society of the Learning Sciences (ISLS)*
- *International Conference of the Learning Sciences (ICLS)*
- *American Society for Engineering Education (ASEE)*

**2022 Svihla, V.**, Davis, S.C., & Kellam, N. (7/2022). The consequential agency of faculty seeking to make departmental change. *Proceedings of the ASEE Annual Conference and Exhibition*.

Wilson-Fetrow, M., Datye, A.K., Davis, S.C., Chi, E., Chen, Y., Gomez, J.R., Shreve, A., Hubka, C., Han, S.M., & **Svihla, V.** (7/2022). Insights and outcomes from a revolution in a chemical engineering department. *Proceedings of the ASEE Annual Conference and Exhibition*.

Wilson-Fetrow, M., Chi, E., Brown, J., Wettstein, S., & **Svihla, V.** (7/2022). Consequential agency in chemical engineering laboratory courses. *Proceedings of the ASEE Annual Conference and Exhibition*.

Olewnik, A. & **Svihla, V.** (7/2022). First-year students' agency related to engineering requirements. *Proceedings of the ASEE Annual Conference and Exhibition*.

Raihanian Mashhadi, A. & **Svihla, V.** (7/2022). Expansive empathy: Defining and measuring a new construct in engineering design. *Proceedings of the ASEE Annual Conference and Exhibition*.

Wilson-Fetrow, M., **Svihla, V.** Chi, E., & Hubka, C. (6/2022). Consequential agency in chemical engineering laboratory experiments. *Proceedings of the ISLS Annual Meeting*.

**2021** Davis, S.C., Kellam, N., **Svihla, V.**, Sundaram, B.V., & Halkiyo, J.B. (7/2021). Powerful change attends to power relations. *Proceedings of the ASEE Annual Conference and Exhibition*. <https://peer.asee.org/37590>

Olewnik, A. & **Svihla, V.** (7/2021). Framing engineering problems in an intramural context. *Proceedings of the ASEE Annual Conference and Exhibition*.  
<https://peer.asee.org/37206>

Velarde, C., Fetrow, M., & **Svihla, V.** (7/2021). A tool for informing community engaged projects. *Proceedings of the ASEE Annual Conference and Exhibition*.  
<https://doi.org/10.18260/1-2--36625>

**Svihla, V.**, Wilson-Fetrow, M., Chi, E., Chen, Y., Datye, A.K., Gomez, J.R. & Olewnik, A. (7/2021). The educative design problem framework. *Proceedings of the ASEE Annual Conference and Exhibition*. <https://peer.asee.org/37852>

Ferris, K., Kang, S.P., Wilson-Fetrow, M., **Svihla, V.**, Chi, E., Gomez, J.R., Chen, Y., Davis, S.C., Han, S.M., & Datye, A.K. (7/2021). Organizational citizenship behavior and care in chemical engineering. *Proceedings of the ASEE Annual Conference and Exhibition*.  
<https://peer.asee.org/37551>

Wilson-Fetrow, M., **Svihla, V.**, Raihanian Mashhadi, A., & Shreve, A. (7/2021). Participation and learning in labs before and during a pandemic. *Proceedings of the ASEE Annual Conference and Exhibition*. <https://peer.asee.org/37564>

Davis, S.C., Chen, Y., **Svihla, V.** Wilson-Fetrow, M., Kang, S.P., Datye, A.K., Chi, E., & Han, S.M. (7/2021). Pandemic pivots show sustained faculty change. *Proceedings of the ASEE Annual Conference and Exhibition*. <https://peer.asee.org/37557>

- Kellam, N., Davis, S., & Svihla, V., (1/2021). Using power, privilege, and intersectionality as lenses to understand our experiences and begin to disrupt and dismantle oppressive structures within academia. *Proceedings of CoNECD*. <https://cms.jee.org/36136>
- 2020 Kellam, N., Svihla, V., & Davis, S. (10/2020). The POWER Special Session: Building Awareness of Power and Privilege on Intersectional Teams. *Proceedings of Frontiers in Education*. <https://doi.org/10.1109/FIE44824.2020.9274238>
- Svihla, V., Tucker, M., & Hynson, T., (10/2020). What gaze data reveal about material agency: Resilient makers, materials and ideas. *Proceedings of FabLearn*. <https://doi.org/10.1145/3386201.3386220>
- Svihla, V. & Kachelmeier, L., (9/2020). The Wrong Theory Protocol: A design thinking tool to enhance creative ideation. *Proceedings of the International Conference on Design Creativity*, <https://doi.org/10.35199/ICDC.2020.28>
- Svihla, V. & Kachelmeier, L., (6/2020). The Wrong Theory Protocol: A pre-ideation technique to enhance creativity and empathy. *Proceedings of the ASEE Annual Conference and Exhibition*. <https://doi.org/10.18260/1-2--35383>
- Raihanian Mashhadi, A. & Svihla, V., (6/2020). Automating detection of framing agency in design team talk. *Proceedings of the ASEE Annual Conference and Exhibition*. <https://doi.org/10.18260/1-2--34199>
- Svihla, V., Kang, S.P., Chen, Y., Qiu, C., & James, J.O. (6/2020). A multidimensional approach to understanding the development of design skills, knowledge, and self-efficacy. *Proceedings of the ASEE Annual Conference and Exhibition*. <https://doi.org/10.18260/1-2--34019>
- Miletic, M., Svihla, V., Chen, Y., Hubka, C., Chi, E., Datye, A.K., (6/2020). Student retention barriers in a chemical engineering program. *Proceedings of the ASEE Annual Conference and Exhibition*. <https://doi.org/10.18260/1-2--35239>
- Ferris, K. Svihla, V., Kang, S.P., (6/2020). Organizational citizenship behavior and faculty mindset amidst professional development activities. *Proceedings of the ASEE Annual Conference and Exhibition*. <https://doi.org/10.18260/1-2--35018>
- Gallup, A., Chen, Y., Kang, S.P., Ferris, K., Wilson-Fetrow, M., & Svihla, V. (6/2020). From Q&A to norm & adapt: The roles of peers in changing faculty beliefs and practice. *Proceedings of the ASEE Annual Conference and Exhibition*. <https://doi.org/10.18260/1-2--34695>
- Svihla, V., Gallup, A., & Kang, S.P., (6/2020). Development and insights from the Measure of Framing Agency. *Proceedings of the ASEE Annual Conference and Exhibition*. <https://doi.org/10.18260/1-2--34442>
- Svihla, V., Chen, Y., Cowan, A., Hynson, T., James, J.O., McGinnis, S., Ramirez Ortiz, A., Tomasson, J., Tucker, M., Wilson Fetrow, M. Albright, C., Desiderio, J., Fallad-Mendoza, D., Ferris, K., Gilliam, D., Megli, A., Roach, M., Sorensen-Unruh, C., & Williams., R. (6/2020) "String Theory": Making connections between theory, design, and task in design-based research. *Proceedings of ICLS*, 2, 1103-1110. <https://repository.isls.org/handle/1/6301>
- Svihla, V. & Peele-Eady, T. (5/2020). Framing agency as a lens into constructionist learning. *Proceedings of Constructionism*. 313-324. <http://www.tara.tcd.ie/bitstream/handle/2262/92768/C2020-Proceedings.pdf?sequence=1#page=320>

- 2019 **Svihla, V.**, Gomez, J.R., Watkins, M.A., & Peele-Eady, T., (6/2019). Characterizing framing agency in design team discourse. *Proceedings of the ASEE Annual Conference and Exhibition*. <https://doi.org/10.18260/1-2--32505>
- White, L., **Svihla, V.**, Chen, Y., Hynson, T., Drackart, I., James, J.O., Saul, C.Y. & Megli, A.C. (6/2019). Validating a measure of problem framing ability to support evidence-based teaching practice. *Proceedings of the ASEE Annual Conference and Exhibition*. <https://doi.org/10.18260/1-2--33528>
- Hubka, C., Chi, E., Chen, Y., **Svihla, V.**, Gomez, J.R., Datye, A.K., & Mallette, T.L. (6/2019). A writing in the disciplines approach to technical report writing in chemical engineering laboratory courses. *Proceedings of the ASEE Annual Conference and Exhibition*. <https://doi.org/10.18260/1-2--32019>
- Gomez, J.R., & **Svihla, V.**, (6/2019). Techno-economic modeling as an inquiry-based design activity in a core chemical engineering course. *Proceedings of the ASEE Annual Conference and Exhibition*. <https://doi.org/10.18260/1-2--33361>
- Miletic, M., **Svihla, V.**, Gomez, J.R., Chi, E., Han, S.M., Hubka, C., Chen, Y., Kang, P.S., & Datye, A.K., (6/2019). Assessment of program-wide curricular change. *Proceedings of the ASEE Annual Conference and Exhibition*. <https://doi.org/10.18260/1-2--32128>
- Hedayati Mehdiabadi, A., James, J.O., & **Svihla, V.**, (6/2019). Ethical reasoning in first-year engineering design. *Proceedings of the ASEE Annual Conference and Exhibition*. <https://doi.org/10.18260/1-2--32757>
- Svihla, V.**, Gomez, J.R., Chen, Y., Chi, E., Han, S. M., Kang, S. P., Miletic, M. & Datye, A. (3/2019). Revolutionizing engineering education by building on students' engineering assets. *Proceedings of the ASEE Gulf Southwest Section Annual Meeting*.
- 2018 James, J.O., **Svihla, V.**, Qiu, C., & Datye, A.D. (7/2018). A new facet: Building multifaceted engineering identity. *Proceedings of ICLS*, 3, 1427-1428, <https://repository.isls.org//handle/1/660>
- Svihla, V.**, Hubka, C., & Chi, E., (7/2018). Peer review and reflection in engineering labs: Writing to learn and learning to write. *Proceedings of the ASEE Annual Conference and Exhibition*. <https://doi.org/10.18260/1-2--30866>
- Ray, L., Hodgson, D., Feinauer, D., White, R., Gawerc, A., Merton, P., Montgomery, D., Allison, B., Amanquah, N., Jackson, C., McBagonluri, F., Shiue, P., Welch, E., Huang, K., Luck, C., West, J., **Svihla, V.**, Murphy, J., Ray, D., (7/2018). BYOE: The fidget car – An apparatus for small group learning in systems and controls. *Proceedings of the ASEE Annual Conference and Exhibition*. <https://doi.org/10.18260/1-2--30171>
- Gomez, J.R. & **Svihla, V.**, (7/2018). Supporting diversity in teams through asset mapping. *Proceedings of the ASEE Annual Conference and Exhibition*. <https://doi.org/10.18260/1-2--31034>
- James, J.O., **Svihla, V.**, Qiu, C., & Riley, C. (7/2018). Using design challenges to develop empathy in first-year courses. *Proceedings of the ASEE Annual Conference and Exhibition*. <https://doi.org/10.18260/1-2--31202>
- Lenz, K., Ista, L. K., Svihla, V., Chi, E. Y., & Canavan, H. E. (7/2018). Work in progress: Biomedical prototype design in collaborative teams to increase students' comprehension and engagement. *Proceedings of the ASEE Annual Conference and Exhibition*. <https://doi.org/10.18260/1-2--29982>



- Ray, L., Hodgson, D., Feinauer, D., White, R., Gawerc, A., Merton, P., Montgomery, D., Allison, B., Amanquah, N., Jackson, C., McBagonluri, F., Shiue, P., Welch, E., Huang, K., Luck, C., West, J., **Svihla, V.**, Murphy, J., Ray, D., (7/2018). Small group learning activities in systems and control theory using fidget cars. *Proceedings of the American Control Conference and Exhibition*. 352-359. <https://doi.org/10.23919/ACC.2018.8431464>
- 2017 Svihla, V.**, Gomez, J.R., Bowers, S., James, J.O., Prescott, P., & Datye, A. (7/2017). Asset-based design projects in a freshman level course. *Proceedings of the ASEE Annual Conference and Exhibition*. <https://doi.org/10.18260/1-2--27645>
- Gomez, J.R., **Svihla, V.**, & Datye, A. (7/2017). Jigsaws & parleys: Strategies for engaging sophomore level students as a learning community. *Proceedings of the ASEE Annual Conference and Exhibition*. <https://doi.org/10.18260/1-2--28597>
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- 2021 Svihla, V. (1/2021). Design thinking. In J.K. McDonald & R.E. West, (Eds.), *Design for Learning: Principles, Processes, and Praxis*. EdTech Books. [https://edtechbooks.org/id/design\\_thinking](https://edtechbooks.org/id/design_thinking) [editor refereed chapter]
- 2020 Boda, P. A. & Svihla, V. (9/2020). Minding the gap: Lacking technology inquiries for designing instruction to retain STEM majors. In M.J. Bishop, J. Elen, E. Boling, & V. Svihla, (Eds.), *Handbook of research in educational communications and technology: Learning and design* (pp. 423-436). Springer. [https://doi.org/10.1007/978-3-030-36119-8\\_19](https://doi.org/10.1007/978-3-030-36119-8_19) [editor refereed chapter]
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- 2013 Svihla, V.** (5/2013). Student-authored publications as a means to teaching science practices. *The Journal of Experimental Secondary Science*. [https://www.academia.edu/12321373/Editorial\\_Student-authored\\_publications\\_as\\_a\\_means\\_to\\_teaching\\_science\\_practices](https://www.academia.edu/12321373/Editorial_Student-authored_publications_as_a_means_to_teaching_science_practices) [editorial]
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- 2009 Svihla, V.**, Vye, N. J., Brown, M., Phillips, R., Gawel, D. J., & Bransford, J. D. (8/2009). Interactive learning assessments for the 21st century. *Education Canada*, 49(3), 44-47. [https://www.academia.edu/290329/Interactive\\_Learning\\_Assessments\\_for\\_the\\_21st\\_Century](https://www.academia.edu/290329/Interactive_Learning_Assessments_for_the_21st_Century) [editor refereed paper]

- 2008 **Svihla, V.**, Marshall, J., & Petrosino, A. J. (9/2008). *K-12 engineering education impacts: National Academy of Engineering Committee on Understanding and Improving K-12 Engineering Education in the United States. [commissioned paper]*
- Petrosino, A. J., **Svihla, V.**, & Brophy, S. P. (2/2008). *Engineering skills for understanding and improving K-12 engineering education in the United States: National Academy of Engineering Committee on Understanding and Improving K-12 Engineering Education in the United States. [commissioned paper]*

## Professional presentations

### Peer reviewed presentations (151 total, a recent sample provided)

- 2022 Wilson-Fetrow, M., **Svihla, V.** Chi, E., & Hubka, C. (6/2022). *Consequential agency in chemical engineering laboratory experiments*. ISLS Annual Meeting.
- Wilson-Fetrow, M., Datye, A.K., Davis, S.C., Chi, E., Chen, Y., Gomez, J.R., Shreve, A., Hubka, C., Han, S.M., & **Svihla, V.** (7/2022). *Insights and outcomes from a revolution in a chemical engineering department*. ASEE 129th Annual Conference and Exhibition.
- Wilson-Fetrow, M., Chi, E., Brown, J., Wettstein, S., & **Svihla, V.** (7/2022). *Consequential agency in chemical engineering laboratory courses*. ASEE 129th Annual Conference and Exhibition.
- Olewnik, A. & **Svihla, V.** (7/2022). *First-year students' agency related to engineering requirements*. ASEE 129th Annual Conference and Exhibition.
- Raihanian Mashhadi, A. & **Svihla, V.** (7/2022). *Expansive empathy: Defining and measuring a new construct in engineering design*. ASEE 129th Annual Conference and Exhibition.
- Svihla, V.**, Schroeder, T., Erhardt, E., Moore, J., Elder, C. (6/2022). *Cultural compatibility perceptions and persistence intentions: Implications for course-based undergraduate research experiences*. ConnectUR 2022 Annual Conference. Online.
- Chen, Y., Kang, S.P., James, J.O., Chi, E., Gomez, J.R., Han, S.M., Datye, A.K., & **Svihla, V.** (4/2022). *Leveraging students' funds of knowledge in chemical engineering design challenges supports persistence intentions*. AERA Annual Meeting, San Diego, CA.
- Wilson-Fetrow, M., Datye, A.K., Hubka, C., & **Svihla, V.** (4/2022). *Consequential agency in chemical engineering laboratory courses*. AERA Annual Meeting, San Diego, CA. <https://aera22-aera.ipostersessions.com/Default.aspx?s=47-E9-40-76-F5-D9-F8-BC-29-2E-25-52-01-1D-92-EB>
- Davis, S.C. & **Svihla, V.** (4/2022). *Creating an emergent, department-embedded community of practice to advance teaching and learning in engineering*. AERA Annual Meeting, San Diego, CA. <https://aera22-aera.ipostersessions.com/Default.aspx?s=89-9F-64-6D-A5-DA-0F-BD-68-7F-1D-8A-9F-E7-7C-6C>
- Ferris, K., Chen, Y., Kang, S.P., & **Svihla, V.** (4/2022). *Using organizational citizenship behaviors as a tool in STEM faculty development*. AERA Annual Meeting, San Diego, CA.
- Davis, S.C., Kellam, N., & **Svihla, V.** (4/2022). *Merged theoretical frameworks for exploring lived experiences of senior faculty on equity-oriented change projects*. AERA Annual Meeting, San Diego, CA.
- Svihla, V.**, Totaro, V., Gutierrez, E., Cole Harmon, R., & Fetrow, M. (4/2022). *Characterizing STEM funds of knowledge and identity in minoritized youth as a foundation for development*. AERA Annual Meeting, San Diego, CA.

- Svihla, V.** (4/2022). *Framing agency and abductive reasoning: Design practices for equitable change*. AERA Annual Meeting, San Diego, CA. <https://aera22-aera.ipostersessions.com/Default.aspx?s=9F-41-7A-7A-5F-D5-C8-6B-91-E8-CE-0E-8B-E0-A7-29>
- 2021** Kang, S.P., Ferris, K., Davis, S.C., Wilson-Fetrow, M., Chi, E., Chen, Y., Datye, A.K., Han, S.M., Gomez, J.R., & **Svihla, V.** (7/2021). *Organizational citizenship behavior and care in chemical engineering*. ASEE 128th Annual Conference and Exhibition. **Selected as Best Paper in Chemical Engineering Division.**
- Svihla, V.**, Wilson-Fetrow, M., Chi, E., Chen, Y., Datye, A.K., Gomez, J.R. & Olewnik, A. (7/2021). *The educative design problem framework*. ASEE 128th Annual Conference and Exhibition.
- Wilson-Fetrow, M., **Svihla, V.**, Raihanian Mashhadi, A., & Shreve, A. (7/2021). *Participation and learning in labs before and during a pandemic*. ASEE 128th Annual Conference and Exhibition.
- Davis, S.C., Chen, Y., **Svihla, V.** Wilson-Fetrow, M., Kang, S.P., Datye, A.K., Chi, E., & Han, S.M. (7/2021). *Pandemic pivots show sustained faculty change*. ASEE 128th Annual Conference and Exhibition.
- Olewnik, A. & **Svihla, V.** (7/2021). *Framing engineering problems in an intramural context*. ASEE 128th Annual Conference and Exhibition. **Selected as one of five best papers in the division from 130 submissions.**
- Velarde, C., Fetrow, M., & **Svihla, V.** (7/2021). *A tool for informing community engaged projects*. ASEE 128th Annual Conference and Exhibition.
- Davis, S.C., Kellam, N., **Svihla, V.**, Sundaram, B.V., & Halkiyo, J.B. (7/2021). *Powerful change attends to power relations*. ASEE 128th Annual Conference and Exhibition.
- Cole Harmon, R., Hospelhorn, M., Gutierrez, E., Velarde, C., Fetrow, M., & **Svihla, V.** (4/2021). *Mission to Mars amidst a pandemic: A design case about pivoting and reaching*. AERA Annual Meeting, San Francisco, CA.
- Svihla, V.**, Gallup, A., & Fetrow, M. (4/2021). *Problem-based learning in the wild*. AERA Annual Meeting, San Francisco, CA.
- Kellam, N., Davis, S., & **Svihla, V.**, (1/2021). *Using power, privilege, and intersectionality as lenses to understand our experiences and begin to disrupt and dismantle oppressive structures within academia*. CoNECD, Crystal City, VA.
- 2020** Ferris, K., Kang, S.P., & **Svihla, V.**, (11/2020). *Dimensions of organizational citizenship behavior as a framework for STEM faculty development in higher education*. AECT, Las Vegas, NV.
- Chen, Y., Kang, S.P., James, J.O., Qiu, C., & **Svihla, V.**, (11/2020). *Meeting students where they are: Identifying diverse funds of knowledge for engineering design*. AECT, Las Vegas, NV.
- Svihla, V.**, Hynson, T., & Tucker, M., (10/2020). *What gaze data reveal about material agency: Resilient makers, materials and ideas*. FabLearn, New York, NY. <https://youtu.be/cBo4ZjEUC2Q?t=1792>
- Svihla, V.** & Kachelmeier, L., (8/2020). *The Wrong Theory Protocol: A design thinking tool to enhance creative ideation*. Sixth International Conference on Design Creativity (ICDC 2020), Oulu, Finland. <https://youtu.be/goxaUWv8WJ4>
- Svihla, V.** & Kachelmeier, L., (6/2020). *The Wrong Theory Protocol: A pre-ideation technique to enhance creativity and empathy*. ASEE 127<sup>th</sup> Annual Conference and Exhibition, Montreal, Canada. <https://youtu.be/ZZALcvoAAwo>.

Raihanian Mashhadi, A.R. & Svihla, V., (6/2020). *Automating detection of framing agency in design team talk*. ASEE 127<sup>th</sup> Annual Conference and Exhibition, Montreal, Canada.  
<https://youtu.be/zjVDs4RMVq0>

Miletic, M., Svihla, V., Chen, Y., Hubka, C., Chi, E., Datye, A.K., (6/2020). *Student Retention Barriers in a Chemical Engineering Program*. ASEE 127<sup>th</sup> Annual Conference and Exhibition, Montreal, Canada.

Svihla, V., Kang, S.P., Chen, Y., Qiu, C., & James, J.O. (6/2020). *A multidimensional approach to understanding the development of design skills, knowledge, and self-efficacy*. ASEE 127<sup>th</sup> Annual Conference and Exhibition, Montreal, Canada.

Ferris, K. Svihla, V., Kang, S.P., (6/2020). *Organizational citizenship behavior and faculty mindset amidst professional development activities*. ASEE 127<sup>th</sup> Annual Conference and Exhibition, Montreal, Canada.

Gallup, A., Chen, Y., Kang, S.P., Ferris, K., Wilson-Fetrow, M., & Svihla, V. (6/2020). *From Q&A to norm & adapt: The roles of peers in changing faculty beliefs and practice*. ASEE 127<sup>th</sup> Annual Conference and Exhibition, Montreal, Canada. **Best paper award, Faculty Development Division.**

Svihla, V., Gallup, A., & Kang, S.P., (6/2020). *Development and insights from the Measure of Framing Agency*. ASEE 127<sup>th</sup> Annual Conference and Exhibition, Montreal, Canada.  
<https://youtu.be/xGOpHBttVUU>

Svihla, V., Chen, Y., Cowan, A., Hynson, T., James, J.O., McGinnis, S., Ramirez Ortiz, A., Tomasson, J., Tucker, M., Wilson Fetrow, M. Albright, C., Desiderio, J., Fallad-Mendoza, D., Ferris, K., Gilliam, D., Megli, A., Roach, M., Sorensen-Unruh, C., & Williams., R. (6/2020). *"String Theory": Making connections between theory, design, and task in design-based research*. ICLS, Nashville, TN. <https://youtu.be/BniUTHkbnNw>  
<https://canvas.instructure.com/enroll/87NDF7>

Svihla, V. & Peele-Eady, T. (5/2020). *Framing agency as a lens into constructionist learning*. Constructionism, Dublin, Ireland. [conference canceled]

Svihla, V. (4/2020). *Making ideation authentic and useful in course-based design*. ASEE GSW section meeting, Albuquerque, NM.

Mitchell, V., Matheson, B., Martin, T., Nguyen, P., Svihla, V., Chi, E., & Canavan, H. (4/2020). *Diverse by design: Increasing the representation of people with disabilities in STEM through community engagement*. ASEE GSW section meeting, Albuquerque, NM.

Chen, Y., Svihla, V., Miletic, M., & Han, S.M., (4/2020). *Enhancing student learning with a community-based design challenge in a transport course*. ASEE GSW section meeting, Albuquerque, NM.

Mallette, T., Wilson-Fetrow, M., James, J.O., Svihla, V., & Datye, A.K., (4/2020). *Benchmark testing enhances focus on feasibility of design solutions*. ASEE GSW section meeting, Albuquerque, NM.

Miletic, M., Svihla, V., Chi, E., Gomez, J.R., Datye, A.K., Kang, S.P., Chen, Y., & Han, S.M., (4/2020). *The design of digital badges to certify professional skills in engineering*. ASEE GSW section meeting, Albuquerque, NM.

Datye, A.K., Gomez, J.R., Miletic, M., Chi, E., Han, S.M., Hubka, C., Chen, Y., Svihla, V., Kang, S.P., & Canavan, H., (4/2020). *Design challenges as a spine to engineering courses*. ASEE GSW section meeting, Albuquerque, NM.

Hubka, C., Chen, Y., Gomez, J.R., Chi, E., Datye, A.K., Wilson-Fetrow, M., & Svihla, V., (4/2020). *Do I have to teach writing?* ASEE GSW section meeting, Albuquerque, NM.

**Svihla, V.**, Chen, Y., Qiu, C., James, J.O., Gallup, A., & Kang, S.P., (4/2020). *Tools for measuring design problem framing progress*. ASEE GSW section meeting, Albuquerque, NM.

Chen, Y., Kang, S.P., James, J.O., White, L., & **Svihla, V.**, (4/2020). *A funds of knowledge approach to developing design problem framing skills*. AERA Annual Meeting, San Francisco, CA. [conference canceled]

Chen, Y., Kang, S.P., Gallup, A., Ferris, K., & **Svihla, V.**, (4/2020). *Proximity and safety as a foundation for supporting faculty to adapt and improvise their teaching*. AERA Annual Meeting, San Francisco, CA. [conference canceled]

Jimenez, M., Law, V., Oishi, M., & **Svihla, V.**, (4/2020). *Students' co-regulation during a complex problem-solving assessment: An eye-tracking study*. AERA Annual Meeting, San Francisco, CA. [conference canceled]

**Svihla, V.**, (4/2020). *Revealing material intentions and conversations through reflective accounts, movement and gaze data*. AERA Annual Meeting, San Francisco, CA. [conference canceled]

**Svihla, V.**, Davis, S., Kellam, N., & Desiderio, J., (2/2020). *Change agency and intersectionality: Understanding and dismantling structural sexism*. Regional discussion on sexual assault and sexual harassment at America's colleges, universities and service academies: Achieving cultural change through data and an evaluation mindset, Albuquerque, NM.

Invited presentations, including as discussant and keynote speaker (61 total, recent provided)

**2022** Chow-Garcia, N., Lee, N., **Svihla, V.**, & Sohn, C. (3/2022). *Cultural Identity Central to Native American Persistence in Science*. Society for Advancement of Chicanos/Hispanics and Native Americans in Science. [Webinar]

**Svihla, V.** (4/2022). *Elevating student agency to promote equity and authenticity in student-led projects*. AERA Annual Meeting, San Diego, CA. [Discussant for refereed session]

**2020** **Svihla, V.** (12/2020). *Panel: Being part of RED*. REDCon Call. [Invited lecture]

**Svihla, V.** (11/2020). *Whose power? Whose designs? Comments on Hickey & Quick's A modest feature for repositioning minoritized online students to support disciplinary engagement and achievement*. AECT Special session. [Session discussant]

**Svihla, V.** (10/2020). *Problem framing tools*. New Space New Mexico / Q Station. [Invited lecture]

**Svihla, V.** (7/2020). *Problem framing tools: AKA How to save the world*. The Air Force Premier College Internship Program. [Invited lecture]

Kellam, N., Davis, S. & **Svihla, V.** (4/2020). *Power and privilege amidst a pandemic: Addressing intersectionality on interdisciplinary teams*. REDCon Call. [Invited lecture]

**Svihla, V.**, (4/2020). *Wrong Theory Protocol episode 1: The science of great ideas*. In C. Goldsmith & E. Dornan (hosts) *Augmented humanity: Where Technology meets the humanities*. National Public Radio.  
<https://kunm.drupal.publicbroadcasting.net/post/wrong-theory-protocol-ep-1-science-great-ideas> [podcast]

**Svihla, V.**, (4/2020). *Wrong Theory Protocol episode 2: Pursuing catastrophic failure*. In C. Goldsmith & E. Dornan (hosts) *Augmented humanity: Where Technology meets the humanities*. National Public Radio.  
<https://kunm.drupal.publicbroadcasting.net/post/wrong-theory-protocol-ep-2-pursuing-catastrophic-failure> [podcast]



**Svihla, V.**, (4/2020). *Wrong Theory Protocol episode 3: Ambitious and wicked problems*. In C. Goldsmith & E. Dornan (hosts) *Augmented humanity: Where Technology meets the humanities*. National Public Radio.  
[https://nmhumanities.org/augmented/audio/AugmentedHumanity\\_Prog010\\_Seg03.mp3](https://nmhumanities.org/augmented/audio/AugmentedHumanity_Prog010_Seg03.mp3) [podcast]

**Svihla, V.**, (4/2020). *Wrong Theory Protocol episode p 4*. In C. Goldsmith & E. Dornan (hosts) *Augmented humanity: Where Technology meets the humanities*. National Public Radio.  
[https://nmhumanities.org/augmented/audio/AugmentedHumanity\\_Prog010\\_Seg04.mp3](https://nmhumanities.org/augmented/audio/AugmentedHumanity_Prog010_Seg04.mp3) [podcast]

**Svihla, V.** (3/2020). *Characterizing and detecting agency to frame problems*. Research spotlight forum on social sciences & decision making, Sandia National Labs.  
<https://bit.ly/2YjrF4J> [1:49] [Invited presentation]

### Research tools

**Svihla, V.**, Gomez, J.R., & Watkins, M.A. (2019). *Framing Agency Coding Toolkit*. This tool introduces the construct *framing agency* and provides a coding scheme, including auto-coding. <http://www.vanessasvihla.org/tools.html>

**Svihla, V.** (2018). *Taming data with Excel*. This tool introduces functions that are particularly useful for qualitative data analysis, project metadata, and making charts.:  
<http://www.vanessasvihla.org/tools.html>

**Svihla, V.** (2017). *How to transcribe: A primer from the learning sciences*. This guide is suitable for those new to the process of transcribing qualitative data.  
<http://www.vanessasvihla.org/tools.html>

### Instructional technology and learning designs

**Svihla, V.** (2018). *The Wrong Theory Protocol*. Available to download from:  
<http://www.vanessasvihla.org/wrong-theory-protocol.html>

**Svihla, V.** (2017). *Are learning styles real?* A short course on the research behind the myth of learning styles. <https://canvas.instructure.com/courses/1253752>.

*Interactive Learning Assessments (ILAs)*. ILAs merge embed assessment in learning experiences. Learners take on the role of expert and give counsel to virtual clients/patients, using resources to learn.

- Yakes, E., **Svihla, V.**, Castillo, T., Cantarero, A., McKay, T., Valdez, I., Hertel, J., & Dominguez, N. (2012) *Nutrition Counselor*, (<http://iddea.unm.edu/>)
- Gawel, D. J., Phillips, R., **Svihla, V.**, Vye, N. J., & Bransford, J. D. (2008). *Genetics Counselor*. (<http://life-slc.org/assessment2/>)
- Gawel, D. J., Phillips, R., **Svihla, V.**, Vye, N. J., & Bransford, J. D. (2007). *Conservation Geneticist*. (<https://catalyst.uw.edu/webq/survey/djgawel/54822>)

**Svihla, V.** (2010). *Web-based Inquiry Science Environment (WISE) Unit*. Global Climate Change, WISE4. (<http://wise.berkeley.edu/previewproject.html?projectId=100>), also accepted to the *Teach the Earth* portal,  
[https://serc.carleton.edu/NAGTWorkshops/complexsystems/activities/climate\\_modeling.html](https://serc.carleton.edu/NAGTWorkshops/complexsystems/activities/climate_modeling.html).

## Media recognition

(9/2021) The write stuff: FACETS project already having impacts in the classroom, *UNM News*, K. Delker, <https://news.unm.edu/news/the-write-stuff-facets-project-already-having-impacts-in-the-classroom>

(9/2020) Fresh perspectives, *ASEE Prism Magazine*, E. Miller & M. Lord, <http://www.asee-prism.org/fresh-perspectives/>

(1/2019) UNM faculty honored by NM Legislature, *UNM News*, R. Whitt, <https://news.unm.edu/news/unm-faculty-honored-by-nm-legislature>

(1/2018) Professor honored with NSF CAREER AWARD. *UNM News*, K. Delker, <https://news.unm.edu/news/soe-junior-faculty-honored-with-nsf-career-award>

(8/2018) Professor receives award for research on teaching. *The Daily Lobo*, D. Prokop, <http://www.dailylobo.com/article/2018/03/professor-awarded-nsf-career-award>

(7/2016) Transforming engineering education goal of \$2 million NSF grant. *UNM Newsroom*. K. Delker. <http://news.unm.edu/news/transforming-engineering-education-goal-of-2-million-nsf-grant>.

(6/2016) UNM project a finalist for diversity award at national conference. *UNM Today*. K. Delker. <http://news.unm.edu/news/unm-project-a-finalist-for-diversity-award-at-national-conference>

(11/2015) Three UNM faculty named National Academy of Education / Spencer Postdoctoral Fellows. *UNM Today*. A. Flores-Thorpe. <http://news.unm.edu/news/three-unm-faculty-named-national-academy-of-education-spencer-postdoctoral-fellows>

(7/2014) Teachers get science lessons of their own this summer. *UNM Today*. K. Delker. <http://news.unm.edu/news/teachers-get-science-lessons-of-their-own-this-summer>

(8/2013) New schools seek new measurement for success. *Albuquerque Business First*. D. Domrzalski. <http://www.bizjournals.com/albuquerque/print-edition/2013/08/23/new-schools-seek-new-measurement-for.html>

(9/2013) Finding a new way to measure learning. *Albuquerque Journal*. H. Heinz. <http://www.abqjournal.com/256943/finding-a-new-way-to-measure-learning.html>

## Grants

### External, funded (15 total; \$3,819,059 as PI or Co-PI)

Evaluator, National Defense Education Program (NDEP) DoD STEM, *Career STEM Trajectories: Research Engagement for Apprentices & Mentors (Career STREAM)* (FY21-23, \$1,695,484). With PI Oscar Martinez (AFRL NM), Ronda Cole Harmon (NM STEM Academy).

Key personnel, NSF IUSE HSI: *Expanding Undergraduate Research Participation in General Education Courses to Improve STEM Persistence and Graduation Rates (E-CURE)* (FY 20-25, \$793,347, DUE #1953349). With PI Pamela Cheek, Erik Erhardt (co-PI), Tim Gutierrez (co-PI), Hua Guo (co-PI).

Evaluator, NIH (FY19-24, \$5,489,070, NIH/NIGMS IRACDA K12 GM088021). Academic Science Education and Research Training (ASERT). With PI Wandinger-Ness, Co-PI Rogers, UNMH; Hedayati-Mehdiabadi, OILS.

Principal Investigator, NSF *Collaborative research: PaiRED: Partnering Across Insider-views of RED* (FY19-22, \$100,000, EAGER EEC #1913128). With collaborators N. Kellam

(Arizona State University) and S. Davis (Oregon State University).

Principal Investigator, NSF CAREER: *Framing and Reframing Agency in Making and Engineering (FRAME)*. (FY18-22, \$516,060, EEC #1751369).

Key Personnel, NSF DUE *Engaged student learning: Exploration and Design: Small group learning in engineering systems and control education* (FY17-FY19, \$299,416, #1611672). With PI Laura Ray & Co-PI Prudence Merton, Dartmouth College School of Engineering.

Principal Investigator, ECMC Foundation (FY16-FY19, \$84,506). *Leadership High School Network Proposal*. Subcontract from New Mexico Center for School Leadership.

Co-principal Investigator, NSF (FY17-21, \$1,999,957, EEC #1623105). *IUSE/PFE:RED: FACETS: Formation of Accomplished Chemical Engineers for Transforming Society*. With PI Datye, SOE & Co-PIs Chi & Han, SOE, & Kang, OILS.

Co-principal Investigator, NSF (FY16-17, \$195,995, CISE #1240992). Supplement to *CS 10K: New Mexico Computer Science for All (NM CSforAll)*. With PI Melanie Moses, SOE, Co-PI Tryphenia Peele-Eady, COE, Co-PI Woong Lim, COE.

Co-principal Investigator, NSF (FY16-17, \$149,998, EEC #1544233). *PFE: Research Initiation—Using Digital Badging and Design Challenge Modules to Develop Professional Identity*. With PI Datye, SOE, Co-PI Gomez, SOE.

Principal Investigator, NAEd/Spencer Postdoctoral Fellowship (FY15-FY16, \$55,000). *Learning to design and designing to learn*.

Grant writer, Kellogg Foundation (FY15, \$1,000,000). *Supporting Transformative Action in Reciprocity Together (START)*. PI Provost Chaouki Abdallah.

Co-principal Investigator, NSF RET (FY14-18, EEC #1301373, \$509,543), *Energizing Engineering Education (E3): An RET site at the University of New Mexico investigating energy research and engineering practice*. PI Chuck Fleddermann, SOE.

Key Personnel, NSF-DUE: Activities to conduct planning workshops or conferences: *Regional workshop for Discipline-Based Educational Researchers*. (FY14, TUES #1316636, \$17,674) with PI Martina Rosenberg, Co-PI Marcy Osgood, and Key personnel Sergio De Haro.

Research Principal Investigator, USDA/NIFA Hispanic-Serving Institutions (HSI) Education Grants Program (FY13-16, #2012-38422-19836, \$280,000). *Interactive Learning Assessment System*, with Administrative PI Beth Yakes Jimenez, IFCE, Nutrition, Tim Castillo (Director, ARTS Lab).

Grant writer. NSF MSP Grant, (FY09-12, DUE #0831811, 9.2 million). *UTeach Engineering: Training Secondary Teachers to Deliver Design-Based Engineering Instruction*, University of Texas at Austin, with PI David T. Allen.

Internal, funded (5, \$232,516)

Principal Investigator, Interdisciplinary Summer Research Funding, UNM. (FY15, \$49,980 including matching and in-kind). *Framing, Learning, Interactive Prototyping (FLIP)*, with Co-PIs Yin Yang (SOE) Trish Steinbrecher (COE) and Matthew Gines (SA+P).

Principal Investigator, Tier 1 Interdisciplinary Summer Research Funding, UNM. (FY14, \$117,199, including matching and in-kind). *Performance Assessments are Rich and Reliable (PARR)*, with Co-PIs Sushilla Knottenbelt, Martina Rosenberg, Tim Castillo, Tony Monfiletto, Tori Stephens-Shauger, Gabriella Duran Blakey, Joshua Krause, Timothy Kubik, Larry Myatt, Katrina Kennett.

Principal Investigator, Tier 1 Interdisciplinary Summer Research Funding, UNM. (FY13, \$58,357, including matching funds from SOE). *Supporting Practice, Integrating Research in Immersive Technologies into Educational Designs (SPIRITED)*, with Co-PI Joe Kniss (SOE), Eileen Waldschmidt (COE), Jonathan Strawn (ARTS Lab), David Beining (ARTS Lab), and Allison Hagerman (ARTS Lab).

Co-Principal Investigator, University of New Mexico Teaching Allocation Grant (TAG) (FY12, #734059 \$4,980). *Interactive Learning Assessment*, with Co-PI Beth Yakes, IFCE, Nutrition Program, UNM, and Tim Castillo (Director, ARTS Lab).

Principal Investigator, University of New Mexico Overhead Funds Allocations Committee (OFAC) Grant (FY12, \$2,000). *Design Learning: Interactions and Learning related to Designerly Practices*.

### Awards & Honors (Recent /significant only)

Martin Award Winner (best paper) for Chemical Engineering at the 2021 ASEE conference.

Selected to present as part of "Best in DEED" at ASEE 2021, the five best papers in the Design in Engineering Education Division.

Participant, Lemelson Foundation's Engineering for One Planet workshop, selected by NSF program officer, Summer 2021.

UNM Center for Teaching and Learning (CTL) Remote Teaching Fellow, Spring 2021

Helen Plants Award, FIE 2020 for Special Session entitled "The POWER Workshop: Building Awareness of Power and Privilege on Intersectional Teams" with N. Kellam & S. Davis.

Best paper award, Faculty Development Division, ASEE 2020.

2020 Corcoran Award (best paper published in 2020 in *Chemical Engineering Education*) for "Building individual accountability through consensus."

2019-2020 Harrison Faculty Excellence Award, School of Engineering.

Engineering Ethics Division Best Diversity Paper, ASEE 2019.

Honored at UNM Day at the New Mexico Legislature, 2019/01.

Christine A. Stanley Award for Diversity and Inclusion Research in Educational Development, *Professional and Organizational Development (POD) Network in Higher Education*, 2018.

Finalist, Best Paper Award, ASEE 2018.

Best Paper Award, First-Year Programs Division, ASEE 2018.

2018 ASEE-GSW Section Outstanding Young Faculty Award.

Best Diversity Paper, ASEE 2016.

NAEd/Spencer Postdoctoral Fellow, 2014 cohort.

Innovation award, *Interactive Learning Assessments*. Fifth Annual Innovations in Practice & Education at FNCE 2013. Selected as 1 of 20 innovations, 10/2013.

## Service

### Professional, external (national & international) service

Ad hoc committee on Journal Structure Charge, *Chemical Engineering Education*. 2022.

Committee Member, ISLS Membership Committee. 2018-2021.

Ad hoc reviewer, National Science Foundation, 2021.

Mentor, AERA Division C's New Faculty Mentorship Program, 2020.

Lead Mentor, EEC CAREER Network. 2019.

Co-chair, short papers, FabLearn 2020.

Academic Advisory Board, *The Journal of Experimental Secondary Science*, 2011-2019.

Organizer, *Inaugural Renegade Poster Session*, ICLS 2018.

Panel Member, National Science Foundation, Alexandria, VA, Spring 2018.

Panel Member, National Science Foundation, Arlington, VA, Spring 2013; Spring 2013; Spring 2012.

Organizing committee (submitted by University of Colorado, Boulder) for *International Conference of the Learning Sciences 2014*, Communications Chair, 2013-2014.

Supporting past-Chair, AERA SIG Learning Sciences, 2012-2013.

Committee Member, ISLS Education Committee. 2011-2016. Head of evaluation subcommittee 2011-2013.

Chair & Program Chair, AERA SIG Learning Sciences, 2011-2012.

Co-Chair, AERA SIG Learning Sciences, 2010-2011.

Session Chair, AERA, six times 2008-2013.

Co-Founder, *Four Corners Learning Sciences* group (2011-2013), a regional collaborative to support research and graduate education on how people learn.

Session Organizer, three times, AERA, 2007-2018.

Graduate Student Representative (elected), Design and Technology SIG, AERA, 2008-2009.

### **Journal reviewer**

- *Studies in Engineering Education* (2021-present)
- *Journal of Engineering Education* (2020-present)
- *International Journal of Designs for Learning* (2015-present)
- *Interdisciplinary Journal of Problem Based Learning* (2015-present)
- *Journal of the Learning Sciences* (2010-present)
- *Instructional Science* (2012-present)
- *AERJ* (2012-present)
- *International Journal of Science Education* (2011-present)
- *Cognition and Instruction* (2010-present)
- *Journal of Interdisciplinary Studies in Education* (2016)
- *Journal of Science Education and Technology* (2014)

- *Learning, Media and Technology* (2014)
- *Frontline Learning Research, European Association for Research on Learning and Instruction* (2014)
- *Mathematics and Computers in Simulation* (2012-2013)
- *INEER Innovations* (2007-2010)

**Conference reviewer**

- *ASEE* (2016-current)
- *FabLearn* (2014-2017, 2020)
- *International Conference of the Learning Sciences* (2008-present)
- *Computer Supported Collaborative Learning* (2009-2015)
- *AERA* (2021, 3 panels; 2020, 3 panels; 2019, 3 panels; 2018, 3 panels; 2017, 2 panels; 2016, 2 panels; 2015, 3 panels; 2014, 2 panels; 2013, 2 panels; 2011, 2 panels; 2010, 3 panels)
- *Games+Learning+Society* (2013)

University Service: University of New Mexico (2011-current)

UNM Santa Fe Midtown Initiative Committee, Fall 2019; Spring-Fall 2021.

Panelist, UNM 2020 NSF CAREER Cohort Kickoff Meeting, Fall 2019.

ReDesign Central Committee Member, Fall 2018-Spring 2019.

Chair, Taskforce 1, UNM Redesign Initiative, Spring-Summer 2018. Focus: Changing demographics and needs of future learners and advances in the science of learning and pedagogy designed to meet those needs and enhance learning. Developed and managed problem framing process, facilitated meetings, drafted report.

Library Committee, 2014-2017; 2018-2021.

Service Learning Advisory Board, 2015-2016.

University service: College of University Libraries & Learning Sciences (2014-current)

Promotion and tenure committee, Fall 2021-Spring 2023

Faculty mentor, Spring-Fall 2019, Spring-Fall 2021.

Ad hoc: Faculty retention practices, Fall 2019.

Dean's Travel Fund Committee, Fall 2016-Spring 2017.

University service: Organization, Information & Learning Sciences Program (2014-current)

Organized OILS unExpo, Spring 2021

CARC Program Assessment Committee, Fall 2014-Fall 2019.

Faculty Search Committee, Fall 2017-Spring 2018, Fall 2014.

TPT Faculty Search Committee, Summer 2018, Fall 2015, Summer 2016, Fall 2018.

Community Service

Board member (elected), New Mexico Partnership for Mathematics and Science Education, 2014-present.

Member, New Mexico Student Success Taskforce, selected from 300 nominees (2019).

School Quality Review team member (nominated based on expertise), led by Larry Myatt. Spring 2016.

Advisory Board Member, Project Learning Tree, 2012-2014.

Advisor, New Mexico Performance Assessment Network, 2012-2014.

Participant, STEM Action Planning Summit, 11/2012, Santa Fe.

Participant, Smithsonian Institution National Science Resources Center, New Mexico LASER i3: Building awareness for Science Education Symposium 4/2012.

Participant, New Mexico Partnership for Mathematics and Science Education, 2012-2013

Participant, Santa Fe Institute's Business Network Topical Meeting, Science, Technology, Engineering, and Mathematics (STEM) Education and the U.S. Workforce Meeting, 9/2011, co-organized by The Boeing Company.

Panelist, Alumni Speaker Series, Goodwill Professions, Indiana Academy for Science, Mathematics, and the Humanities, 11/2007

Peace Corps Volunteer, Philippines, July 1998-May 2000. Led community workshops in methods of cave conservation, reforestation, and eco-tourism.