

Steven M. Weiner, PhD

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Personal Statement

I am passionate about understanding how design-oriented practices, technologies, learning environments, and pedagogies can foster transformative systemic and cultural change within schools. My research has focused on the ways in which making, prototyping, and imaginative methods might be catalysts for changing the institutional norms of formal education and how these changes can be sustained over time.

Education

- December 2022 ***PhD, Human and Social Dimensions of Science and Technology***
College of Global Futures
Arizona State University | Tempe, AZ
- May 2008 ***BA, Classical Studies***
Minors in Physics and Italian Studies
College of Liberal Arts and Sciences
University of Florida | Gainesville, FL

Research Experience

- May 2021 - Present **Research Analyst**
Center on Reinventing Public Education
- Fall 2018 – Fall 2021 **Independent Dissertation Research**
Graduate Research Fellowship Program (NSF Solicitation #11-582)
National Science Foundation
- Fall 2016 - Fall 2018 **Graduate Research Associate**
PIs: Drs. Shawn Jordan and Micah Lande
- Maker Educational Pathways (NSF Grant #1329321)
 - Maker Learning Trajectories (NSF Grant #1723802)
- PI: Dr. Bryan Henderson
- DiALoG Argumentation Project (NSF Grants #1621496, #1621441)

Key Research Activities¹

- J1, C5, C6, J5* **Gathered and analyzed qualitative data** from young makers and their parents with critical incident and artifact elicitation interview protocols
- J2, J3* **Analyzed qualitative data** from pre-service and in-practice STEM teachers utilizing thematic analysis and institutionally oriented theoretical frameworks
- J1, C5, C6* **Led research studies** on maker identity using existing and newly gathered data

¹ Details about the referenced journal papers [J] and conference proceedings [C] can be found below

- C3-C6, C8, C9, J2, J4 **Mentored undergraduates** in developing research questions, conducting studies, and writing conference papers and journal articles
- C7 **Surveyed and synthesized current literature** on maker education within the engineering education academic community

Peer-Reviewed Journal Publications

- J6 Henderson, J., Zillmer, N., Holton, A., **Weiner, S.**, Greenwald, E., Goss, M., Lopez M., Morales, C., Pearson, P., & McNeill, L. (2021). How Science Teachers DiALoG Classrooms: Towards a Practical and Responsive Formative Assessment of Oral Argumentation. *Journal of Science Education and Technology*.
- J5 **Weiner, S.**, Warr, M., Mishra, P. (2020) Fostering System-Level Perspective Taking When Designing for Change in Educational Systems. *Tech Trends*.
- J4 **Weiner, S.**, Jordan, S., & Lande, M. (2020) What to “make” of school: revealing the conflicting institutional logics of grassroots making and formal education. *Journal of Research on Technology in Education*.
- J3 Larson, J., Jordan, S., Lande, M., **Weiner, S.** (2020) Supporting Self-Directed Learning in a Project-Based Embedded Systems Design Course. *IEEE Transactions on Education*.
- J2 **Weiner, S.**, Lande, M., & Jordan S. (2020). Designing (and) Making Teachers: Using Design to Investigate the Impact of Maker-based Education Training on Pre-service STEM Teachers. *International Journal of Engineering Education*.
- J1 **Weiner, S.**, Jordan, S., & Lande, M. (2018). The Engineer of 2020, in the Making: Understanding how young adults develop Maker identities and the implications for education reform. *International Journal of Engineering Education*.

Conference Proceedings

- C9 **Weiner, S.**, Lande, M., & Jordan, S. (2019). Designing (and) Making Teachers: Using Design to Investigate the Impact of Maker-based Education Training on Pre-service STEM Teachers. In *Clive L. Dym Mudd Design Workshops*. Harvey Mudd College, Claremont, CA.
- C8 Horton, P., Jordan, S., Lande, M., & **Weiner, S.** (2018). Project-Based Learning Among Engineering Students During Short-Form Hackathon Events. In *Proceedings of the American Society for Engineering Education (ASEE) Annual Conference & Exposition*. Salt Lake City. UT.
- C7 **Weiner, S.**, Lande, M., & Jordan, S. (2018). What have we “learned” from Maker Education research?: A Learning Sciences-based review of ASEE literature on the Maker Movement. In *Proceedings of the American Society for Engineering Education (ASEE) Annual Conference & Exposition*. Salt Lake City, UT.
- C6 **Weiner, S.**, Lande, M., & Jordan, S. (2017). Making Identities: Understanding the factors that lead young adults to identify with the Maker Movement. In *Proceedings of the American Society for Engineering Education (ASEE) Annual Conference & Exposition*. Columbus, OH.

- C5 **Weiner, S.**, Lande, M., & Jordan, S. (2017). The Engineer of 2020, in the Making: Understanding how young adults develop Maker identities and the implications for education reform. In *Clive L. Dym Mudd Design Workshops*. Harvey Mudd College, Claremont, CA.
- C4 Lande, M., Jordan, S., & **Weiner, S.** (2017). Making people and projects: Implications for making-based learning. Presented at the ASEE Pacific Southwest Conference, Tempe, AZ.
- C3 La Place, C., Jordan, S., Lande, M., & **Weiner, S.** (2017). Engineering Students Rapidly Learning at Hackathon Events. In *Proceedings of the American Society for Engineering Education (ASEE) Annual Conference & Exposition*. Columbus, OH.
- C2 Larson, J., Lande, M., Jordan, S., & **Weiner, S.** (2017). Makers as Adaptive Experts-in-Training: How Maker Design Practices Could Lead to the Engineers of the Future. In *Proceedings of the American Society for Engineering Education (ASEE) Annual Conference & Exposition*. Columbus, OH.
- C1 Mabey, M. J., Jordan, S., Lande, M., & **Weiner, S.** (2017). A Comparison of Maker and Entrepreneurial Characteristics. In *Proceedings of the American Society for Engineering Education (ASEE) Annual Conference & Exposition*. Columbus, OH.

Other Publications

- November 2022 **Weiner, S.** & Chu, L. (2022). How districts can get serious about career-relevant learning, even in the midst of a pandemic. *The Lens*. Center on Reinventing Public Education.
- June 2022 **Weiner, S.** (2022) Pods in Action: KaiPod Learning. Center on Reinventing Public Education.
- February 2022 **Weiner, S.** & Chu, L. (2022). With better policies – and a little help – career-relevant education can move from the exception to the rule in schools. *The Lens*. Center on Reinventing Public Education.
- January 2022 Heyward, G. & **Weiner, S.** (2022). Developing Homegrown Talent. *School Administrator*.
- October 2021 **Weiner, S.** (2021) Pandemic learning pod instructors loved teaching, but don't want to be traditional classroom teachers. *The Lens*. Center on Reinventing Public Education.

Awards, Fellowships, and Commendations

- February 2020 **Global Horizon Scanning Ambassadorship**, an international program run by the Copenhagen Institute for Futures Studies that engages early-career experts in a wide range of fields in order to “collect, compare and evaluate a wide range of signals – including new and emerging trends, technologies, values, products, concepts, companies, services, and ideas”.
- September 2019 **Imaginary College Graduate Fellow**, a collaboration with Arizona State University's Center for Science and the Imagination that “celebrates the

individuals and groups who are already advancing [their] mission of fresh, creative and ambitious thinking about the future”.

- November 2018 **University Innovation Fellows**, a year-long fellowship for training and capacity-building in design thinking and organizational change within higher education. Granted through Stanford University’s Hasso Plattner Institute of Design.
- April 2018 **HSD Personal Achievement Award**, in recognition of outstanding individual accomplishments during PhD studies. Awarded by Arizona State University’s School for the Future of Innovation in Society.
- April 2018 **NSF GRFP Fellowship**, a competitive national fellowship that provides funding and tuition for three years of graduate studies. Granted through the National Science Foundation’s Graduate Research Fellowship Program.
- June 2017 **DEED Student Essay Contest**, *How engineering design education will be everywhere and nowhere in 2040*. Written for the Design in Engineering Education Division (DEED) of the American Society for Engineering Education (ASEE). Presented at the 2017 ASEE Annual Conference. Columbus, OH.
- November 2016 **Tormach Poster Award**, *CREATE-ing a welcoming space for Maker culture*. Poster presented at the 1st International Symposium on Academic Makerspaces (ISAM) 2016, Cambridge, Mass.

Posters, Panels, and Invited Talks

- August 2020 Comisso, M., **Weiner, S.** (2020, August 18). *Emoji technology assessment: experiments in sociotechnical engagement*. **Panel Presentation** at the 2020 Society for Social Studies of Science (4S) Annual Conference; Prague, CZ (Virtual)
- March 2019 **Weiner, S.**, Haymes, T., Pendse, R. (2019, March 14-15). *The Future of Assessment and Grading in Higher Education*. **Group facilitator** at the 2019 ShapingEDU Unconference, Tempe, AZ.
- May 2018 Lande, M., Jordan, S., **Weiner, S.** (2018, May 20). *Majoring in Making in College*. **Panel Discussion** (moderator) presented at the 2018 Maker Faire Bay Area, San Mateo, CA
- October 2017 **Weiner, S.** (2017, October). *The New Democratic Innovators: Young Makers and the Future of User-Centered Innovation*. **Poster** presented at the 2017 Society for the Study of New and Emerging Technology (S.NET) Meeting, Tempe, AZ
- August 2017 **Weiner, S.**, Ose, E., Leung, J., Smalley, J., Royal L. & Carroll, P. (2017, August). *Starting and Running a Makerspace*. **Panel Discussion** presented at the AZSciTech Festival Kick-off Conference, Mesa, AZ.
- March 2017 **Weiner, S.**, Diaz, C., Osowski, A., Morris, J., Hardina, S., & Pajak, A. (2017, March). *How to start your own Inquiry Based Learning Space*. **Panel Discussion** presented at the Southwest Maker Fest, Mesa, AZ.
- November 2016 **Weiner, S.** (2016, November). *CREATE-ing a welcoming space for Maker culture*. **Poster** presented at the 1st International Symposium on Academic Makerspaces (ISAM) 2016, Cambridge, MA.

- October 2016 Lande, M., Jordan, S., & **Weiner, S.** (2016, October 2). Making research to educational practice. **Invited talk** at the 2016 World Maker Faire New York, Corona, NY.
- April 2015 **Weiner, S.** (2015, April 20) Making CREATE, a community-centered makerspace. **Invited talk** at the 2015 Phoenix Urban Design Week, Phoenix, AZ.

Volunteer, Outreach, and Community Service

- February 2020 **High School Research Project Judge**
Arizona Junior Science & Humanities Symposium
Mesa, AZ
- October 2019 **Distinguished Advisor: NSF Graduate Research Fellowship Program**
Arizona State University, Graduate College
Tempe, AZ
- December 2018 **Workshop Leader: Integrating Making, Design, and STEAM Education**
Arizona State University, Polytechnic Campus
Mesa, AZ
Conducted workshops for in-service K-8 teachers and administrators on how design and making activities can bridge the divide between STEM and Art
- August 2018 (On-going) **Journal Reviewer**
Journal of Engineering Education (JEE), Journal of Pre-College Engineering Education Research (J-PEER), Advances in Engineering Education (AEE), Studies in Engineering Education (SEE)
- April 2018 **Workshop Leader: Maker Education Pedagogy**
Arizona State University, Mary Lou Fulton Teacher's College
Mesa, AZ
Conducted hands-on introductory seminar for pre-service K-8 STEM teachers on the maker movement, focusing on how to infuse making into their classrooms and curricula.
- October 2017 **Volunteer, FabLearn Conference**
Stanford University
Stanford, CA
Provided on-site organizational assistance during a 2-day conference on maker education hosted by Stanford University's Graduate School of Education
- Fall 2017-
Fall 2018 **Mentor, Chief Science Officer Program**
Arizona Technology Council
Phoenix, AZ
Advised high school students and teachers from the Greater Phoenix Metro Area on ways to foster STEM cultures in their schools.

Educational Training/Pedagogy Courses

- July 2014 **Summer Teacher Institute**
Exploratorium
San Francisco, CA

Competitive summer program for middle and high school science teachers run by world-renowned scientists and educators at a top-tier interactive science center.

June 2010 **Postgraduate Studies, Summer Physics Modeling Workshop**
Arizona State University
Tempe, AZ
Three-week course on teaching electromagnetism and circuits using an inquiry-based, lab-first pedagogy developed at Arizona State University.

Professional Experience

- Oct 2022- Present **Senior Research Analyst**
Center on Reinventing Public Education, Arizona State University
Tempe, AZ (remote)
- Leading direction and thought partnership on several projects focused on innovation and durable change within both traditional educational systems (e.g., schools and districts) as well as non-traditional learning environments (e.g., microschoools, community-based organizations).
 - Managing relationships with funders as well as organizational leaders participating in organizing large-scale studies.
- May 2021 – Oct 2022 **Research Analyst**
Center on Reinventing Public Education, University of Washington
Seattle, WA
- Engage in systems-level qualitative research focused on the connection between educational policies and practices.
 - Co-lead research projects on innovative CTE programs, OST learning, and pandemic-era learning pods, interviewing teachers, parents, school leaders, and district administrators
 - Communicate research findings to grant funders and public through blogs, practitioner-focused journals, and presentations.
- March 2020- August 2022 **Educational Research Consultant**
Seattle, WA
- Partnered with established school district consulting firm to advise on the development of a new project-based high school
 - Leveraged academic research for presentation to district leadership team on building a maker-oriented school culture
 - Facilitated a summer-long series of Socratic discussions with a cross-functional team focused on exploring how school systems can support deeper learning
- July 2014 - August 2016 **Program Director**
CREATE at Arizona Science Center
Phoenix, AZ
- Contributed to the physical, programmatic, and organizational design of a 6,500 sq. ft. education-oriented, community makerspace
 - Developed relationships with local corporate, non-profit, and educational organizations to foster the growth of a Phoenix-based Maker community

- Oversaw a staff of four full-time and four part-time employees, and an annual program budget of \$30,000

Assisted in the creation and implementation of STE(A)M-based hands-on activities and technical workshops

August 2009 **Science & Math Teacher**

- Dec 2014 Great Hearts Academies

Phoenix, AZ

- Taught Physics I, Physics II, Earth Science and Pre-calculus using inquiry-based methodologies
- Served as Curriculum Consultant for Physics I teachers in the Great Hearts Academies charter school network
- Co-led a making-based STE(A)M club of over 50 students, ranging from rocketry to Rube Goldberg machine

August - **Staff Science Reporter**

Dec 2007 The Independent Florida Alligator

Gainesville, FL

- Interviewed dozens of scientists, engineers, and school officials on latest University of Florida research
- Wrote numerous feature-length articles on topics ranging from stem cell research to nano-scale engineering
- Developed skills in communicating complex scientific ideas to a wide-ranging audience