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Victoria M. Hand

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Colorado-Boulder  
School of Education, 249 UCB  
Boulder, CO 80309

#### EDUCATION

Ph.D., Educational Psychology, emphasis in Mathematics Education  
Stanford University, 2003

M.A., Learning, Design, and Technology  
Stanford University, 1998

B.A., Quantitative Economics and Decision Sciences  
University of California, San Diego, 1989

#### CURRENT APPOINTMENT

Associate Professor, STEM Education, Math Education  
University of Colorado, Boulder, 2014- present

#### PREVIOUS APPOINTMENTS

Assistant Professor, Curriculum and Instruction, Math Education  
University of Colorado, Boulder, 2007- 2014

Assistant Professor, Curriculum and Instruction, Math Education  
University of Wisconsin, Madison, 2005 -2007

Post-doctoral Research Associate  
University of California, Berkeley, 2003-2005

#### AWARDS

Women Who Make a Difference, University of Colorado Boulder, 2019  
Provost's Faculty Achievement Award, University of Colorado Boulder, 2013  
Division G Henry T. Trueba Award for Research Leading to the Transformation of the Social Contexts of Education,

(Awarded to the Diversity in Mathematics Education (DiME) center), AERA, 2013  
Chancellor's Award for Excellence in STEM Education, University of Colorado, Boulder, 2011  
Vilas Award, University of Wisconsin-Madison, 2006

#### FUNDED RESEARCH

van Es, E. & Hand, V. (\$1.4M; July, 2017 – July, 2023). Collaborative Research: Community and Teacher Teams Investigate Equitable Noticing and Dispositions (Co-ATTEND).

Researching and theorizing a community-based approach to professional development for mathematics teacher noticing for equity. Involves monthly video club meetings with teachers, community leaders and researchers, as well as a summer institute.

Frameworks developed by first video club groups will be employed in professional development for a second cohort of teachers.

Herbel-Eisenmann, B., Foote, M., Hand, V., Wager, A., (\$2.5M; August, 2014 – September, 2019). Agency, access and allies in mathematical systems. Designing, facilitating and studying professional development and participatory action research to support equitable mathematical systems. Involves two-week teacher institute focused on grades 4-8 mathematics and CCSM mathematical practices, with respect to issues of power and oppression for students from less-dominant racial, ethnic and linguistic backgrounds. Followed by one year of action research (AR) and one year of design-based implementation research (DBIR), in which researchers focus on features of agency, access and allies from the perspective of three components in the system (students, teachers and mathematics teacher educators).

Hand, V. & van Es, E. (\$40,000; August 2012-August, 2014). Teacher noticing for equitable mathematics instruction. Researching the noticing practices of secondary mathematics teachers. Teachers nominated by district leaders for success in reaching a broad range of learners. Observed and videotaped teachers' classrooms and conducted noticing interviews with them around video clips from their classrooms and professional videos of classroom teaching. Spencer Foundation.

Hand, V. (\$24,000; January 2010-September 2012). Imagined trajectories for underrepresented high school students. Designed and researched a mentoring opportunity for high school sophomores from underrepresented backgrounds, who excelled in mathematics and science. Students mentored middle school students engaged in innovative, inquiry-based STEM activities. Findings point to the role of design opportunities for learning in shaping students' lived narratives around STEM learning, equity and achievement. CU STEM Excellence, Women Investing in the School of Education (WISE) grants, and CU Office of Diversity and Excellence.

Hand, V. (\$10,000; September 2006-June 2007). Teaching mathematics for equity. Designed and led a professional development working group of researchers and teachers that analyzed perspectives on and tools for equity in mathematics education, including: culturally relevant pedagogy, Complex Instruction, funds-of-knowledge, and teaching for social justice. Classroom design experiments also conducted. Findings presented at conferences and in a book chapter NSF-Diversity in Mathematics Education.

Saxe, G. & Hand, V. (\$15,000; June 2005-September 2006). Opportunities to learn in middle school mathematics classrooms. Conducted a year-long study on the development of opportunities to learn mathematics in low- and high-track middle school mathematics classrooms with diverse populations of students. Opportunities for learning (and resisting) mathematics were analyzed with respect to patterns in task structure, teacher responsiveness, student positioning, and the negotiation of students' discourse activities. Findings presented at professional conferences, in a handbook chapter, and in a journal article. AERA/IES.

## COURSES TAUGHT

### University of Colorado-Boulder

Perspectives on Teaching and Learning, Doctoral Level

Theories of Learning in Science and Mathematics Education, Doctoral Level

Qualitative Methods II, Doctoral Level

Adolescent Learning and Development, Master's Level

Teaching for Understanding and Equity, Master's Level

Knowing and Learning Mathematics and Science, *Combined* Undergraduate/Graduate Course

Educational Psychology and Adolescent Development, Undergraduate

Elementary Mathematics Methods, University of Colorado-Boulder and other universities

## PUBLICATIONS, PRESENTATIONS AND WORKS UNDER REVIEW

### Peer-reviewed journal articles

van Es, E., Hand, V., Agarwal, P.\* & Sandoval, C.\* (2022). Multidimensional noticing for equity: theorizing mathematics teachers' systems of noticing to disrupt inequities.

*Journal for Research in Mathematics Education*, 53(2), 114-132.

Mendoza, E., Hand, V., van Es, E. A., Hoos, S\*., & Frierson, M\*. (2021). 'The ability to lay yourself bare': centering rupture, inherited conversations, and vulnerability in professional development. *Professional Development in Education*, 47(2-3), 243-256.

- Gresalfi, M. & Hand, V. (2019). Coordinating Situated Identities in Mathematics Classrooms with Sociohistorical Narratives: A Consideration for Design. *ZDM*
- Zavala, M. D. R., & Hand, V. (2017). Conflicting narratives of success in mathematics and science education: challenging the achievement-motivation master narrative. *Race Ethnicity and Education*, 1-19.
- Hand, V., Kirtley, K\*, & Matassa, M.\* (2015). Narrowing participation gaps. *Mathematics Teacher*, 109 (4), p. 262-270.
- Hand, V. & Gresalfi, M. (2015). The joint accomplishment of identity. *Educational Psychologist*, 50(3), 190-203.
- Hand, V. & Goffney, I. M. (2013). "All for one and one for all": negotiating solidarity around power and oppression in mathematics education. *Journal for Urban Mathematics Education*, 6(1), 28-34.
- Hand, V., Penuel, W., Gutiérrez, K. (2012). (Re)framing educational possibility: attending to power and equity in shaping access to and within learning opportunities. *Human Development*, 55, 250-268.
- Hand, V. (2012). Seeing power and culture in mathematics learning: teacher noticing for equitable mathematics instruction. *Educational Studies in Mathematics*, 80(1), 233-247.
- Hand, V. (2010). The co-construction of opposition within a low-track mathematics classroom. *American Educational Research Journal*, 47(1), 97-132.
- Gresalfi, M., Martin, T., Hand, V., & Greeno, J. G. (2009). Constructing competence: an analysis of student participation in the activity systems of mathematics classrooms. *Educational Studies in Mathematics*, 70(1), 49-70.
- Nasir, N. S., Hand, V., & Taylor, E. V. (2008). Culture and mathematics in school: boundaries between "cultural" and "domain" knowledge in the mathematics classroom and beyond. *Review of Research in Education*, 32, 187-240.
- Nasir, N. S. & Hand, V. (2008). From the court to the classroom: opportunities for engagement, learning and identity in basketball and classroom mathematics. *Journal of the Learning Sciences*, 17(2), 143-180.
- Nasir, N. S. & Hand, V. (2006). Exploring sociocultural perspectives on race, culture, and learning. *Review of Educational Research*, 76(4), 449-475.
- Hand, V. (2006). Operationalizing culture and identity in ways to capture the negotiation of participation across communities. *Human Development*. 49(1), 36-41.

#### Peer-reviewed monographs

- Crespo, S., Gargroetzi, E.\*, Hand, V. & Herbel-Eisenmann, B. (2021). Ethics and identity research in the field of mathematics education: reflections. In Shah, N. & Langer-Osuna, J. (Eds.), *Making visible the invisible: The promise and challenges of*

identity research in mathematics education. *Journal for Research in Mathematics Education Monograph*, 17, 83-108. NCTM: Reston, VA

- Shah, N., Cosby, M.\*, Goffney, I., Kalinec-Craig, C., Wood, M., Crespo, S., & Hand, V. (2021). "Bossy," "boy," and "urban": troubling coded language in mathematics education research. In Shah, N. & Langer-Osuna, J. (Eds.), Making visible the invisible: The promise and challenges of identity research in mathematics education. *Journal for Research in Mathematics Education Monograph*, 17, 13-33. NCTM: Reston, VA
- van Es, E., Hand, V., Mercado, J.\* (2017). Making Visible the Relationship between Teachers' Noticing for Equity and Equitable Teaching Practice. In Schack, E., Fisher, M., & Wilhelm, J. (Eds.), Building Perspectives of Teacher Noticing. NCTM: Reston, VA

#### Articles, monographs and chapters accepted or in press

- Osibodu, M.\*, Byun, S.\*, Hand, V. & LopezLevis, C. (in press). A participatory turn in mathematics education research. *Journal for Research in Mathematics Education*.

#### Articles, monographs and chapters under review

- Frierson, M., Hand, V., Mendoza, E. & Yoon, J. (2nd revision). Communities as fraught spaces. *AERA Open*.

#### Book chapters

- Hand, V., Herbel-Eisenmann, B., Byun, S.\*, Koestler, C., Bartell, T. (2020). Tensions and failures in studies of whiteness among diverse research teams. In A. Andersson & R. Barwell (Eds.) *Applying Critical Perspectives in Mathematics*. Sense Publishers.
- Spencer, J., & Hand, V. (2015). The racialization of mathematics education. *The Race Controversy in American Education*. Santa Barbara, CA: Praeger.
- Hand, V. (2014). "Taking up our space": becoming competent learners in the mathematics classroom. In N. Nasir, N. Louie, C. Cabana, B. Shreve & E. Woodbury (Eds.), *Mathematics for Equity: A Framework for Successful Practice*. New York, NY: Teachers College Press.
- Hand, V., Quindel, J., & Esmonde, I. (2010). Status and competence as entry points into discussions of equity in mathematics classrooms. In M. Q. Foote (Ed.), *Mathematics Teaching & Learning in K-12: Equity and Professional Development*. New York: Palgrave.
- DiME. (2007). Culture, race, power, and mathematics education. In F. Lester (Ed.), *Handbook of Research on Mathematics Teaching and Learning* (2nd ed.). Reston, VA: NCTM.

#### Books under review, accepted, or in press

- Hand, V., & van Es, E. (under review). Participatory approaches to mathematics teacher noticing for equity. Submitted to Harvard Education Press.

## Book reviews

- Hand, V. & Meaney, T. (2014). Rousing mathematics classroom discourse out of the ice age: Beth Herbel-Eisenmann, B.; Choppin, J.; Wagner, D.; Pimm, D. (Eds.) (2013) Equity in Discourse for Mathematics Education: Theories, Practices, and Policies. *Journal for Research in Mathematics Education*.
- Hand, V. (2011). Adding depth to portraits of mathematics inquiry: Karin Brodie (2010) Teaching Mathematical Reasoning in Secondary Schools. *Educational Studies in Mathematics*. 79(1), 149-155.

## Peer-reviewed conference proceedings

- Donoghue T., Hand V., Aguirre B., & Leos, V. (2023). "I understand that their minds might be elsewhere": towards a culturally responsive mathematics pedagogy. Published in the Proceedings of the 45th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (PME). Reno, NV.
- Aguirre B., Hand V., Donoghue T., & Leos, V. (2023). Developing Political Conocimiento. Published in the Proceedings of the 45th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (PME). Reno, NV.
- Hand, V., Mendoza, E., Mackey, J., Frierson, M. & Byun, S., (2022). Unearthing tensions in a PAR Project. Published in the Proceedings of the International Conference of the Learning Sciences. (virtual)
- Hand, V., van Es, E., Garcia, J., & Freeman, Q. (2016). Towards a Conceptual Model of Mathematics Teacher Noticing for Equity. Published in the Proceedings of the 9th International Mathematics Education and Society Conference, Volos, Greece.
- Hand, V. (2015). Frame Analysis in Mathematics Education. Published in the Proceedings of the 8th International Mathematics Education and Society Conference, Portland, OR.
- van Es, E. A., Hand, V., Mercado, J. (2014, June). Using Video to Collaboratively Examine Equitable Secondary Mathematics Teaching. In I. Horn (Chair), Teachers' Learning about Equitable Practice through Talk with Colleagues. Symposium presentation at the International Conference of the Learning Sciences, Boulder, CO.
- Hand, V., Zavala, M. & Harris, L. (2013). Constructing narratives around STEM achievement and motivation among learners from non-dominant backgrounds. Published in the Proceedings of the 35th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (PME). Chicago, Illinois.
- Hand, V., DeAnda, P., Williams, C. (2007). "What counts as mathematical activity and who decides?": the Discourse of mathematics in mathematics education. In Lamberg, T. &

Wiest, L.R. (Eds). The Proceedings of the 29th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (PME), (pp. 665-671). NV: University of Nevada, Reno

Hand, V., Bannister, V. P., Bartell, T. G., Battey, D., & Spencer, J. (2006). Inequity in mathematics education: moving beyond individual-level explanations of differential mathematics achievement to account for race and power. In Alatorre, S., Cortina, J.L., Sáiz, M., and Méndez, A. (Eds). The Proceedings of the 28th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (PME), (pp. 481-487). Mérida, Mexico: Universidad.

Gresalfi, M. S., Hand, V. & Hodge, L. (2006). Creating opportunities for all: unpacking equitable practices in mathematics classrooms. In Alatorre, S., Cortina, J.L., Sáiz, M., and Méndez, A. (Eds). The Proceedings of the 28th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (PME), (pp. 515-518). Mérida, Mexico: Universidad.

Hand, V. (2004). Meaningful mathematical activity: opportunities for linking in diverse mathematics classrooms. In McDougall & Ross, J. (Eds). The Proceedings of the 26th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (PME), (pp. 791-799). Toronto, Ontario: Ontario Institute for Studies in Education

Hand, V. (2002). Constructing mathematical competence: students as authors. In P. Bell, R. J. Stevens & T. Satwicz (Eds.), Keeping learning complex: The Proceedings of the Fifth International Conference of the Learning Sciences (ICLS). Mahwah, NJ: Erlbaum.

### Selected conference presentations

Hand, V., Mendoza, E. & van Es, E. (2022). Collaborative approaches for anti-oppressive noticing in mathematics education. Symposium presentation at the American Educational Research Association. San Diego, California.

Hand, V., Jurow, S. & Vossoughi, S. (2020). Imagining socio-political and ethical horizons of the Learning Sciences: Learning with and from junior and senior scholars. Invited session presented at the International Conference of the Learning Sciences, online.

Hand, V., van Es, E. & Mendoza, E. (2018). Critical participatory and multisensory approaches in mathematics teacher noticing. Symposium presentation at the American Educational Research Association, Toronto, Canada.

Hand, V., van Es, E., Mendoza, E. (2018). A participatory approach to noticing for equity. Paper presentation at the National Council of Mathematics Teachers, San Diego, CA.

Bartell, T., Byun, S., Hand, V., Herbel-Eisenmann, B., Koestler, C., & Scroggins, A., (alphabetical order). (2017). An Instantiation of White Institutional Space by White

- Mathematics Teacher Educators. Paper presented at the American Educational Research Association, San Antonio, TX.
- Hand, V., van Es, E. A., Mercado, J.\* & Freeman, Q.\* (2017). Seeing Beyond Ourselves: A Conceptualization of Mathematics Teacher Noticing for Equity. In E. van Es (chair), Noticing for Equity. Symposium presentation at the American Educational Research Association, San Antonio, TX.
- Hand, V., van Es, E. A., Mercado, J.\* & Freeman, Q.\* (2017). Seeing the Forest from the Trees. In Richards, J. (Chair). Exploring Varied Approaches to Supporting Responsive Teaching in Science and Mathematics. Structured poster presentation at the American Educational Research Association, San Antonio, TX.
- Mercado, J.\*, van Es, E. A., Hand, V. (2017). Interpreting teacher noticing for equity. In E. van Es & J. Walkoe (chairs), Teacher Noticing for Equitable Teaching Practices in Mathematics. Symposium presentation at the annual meeting of the American Educational Research Association, San Antonio, TX.
- Zavala, M. & Hand, V. (2016) Grappling with Ready-made Narratives Around Race, Motivation, Achievement and Opportunity in Mathematics. Paper presented at the National Council for Teachers of Mathematics: San Francisco, CA.
- Larnell, G.V., LopezLeiva, C., Koestler, C., Wager, A. Hand, V. (2016, April). Reframing Equity in Mathematical Systems: On the Roles of Access, Allies, and Agency. Paper accepted (and presented in G. Larnell's absence) at the annual meeting of the American Educational Research Association, Washington, DC, USA.
- Mercado, J., van Es, E., & Hand, V. (2015). Exploring equitable practices: noticing the student in mathematics. Paper presented at the American Mathematics Teacher Education conference, Orlando, FL.
- van Es, B., Hand, V. Mercado, J., C'deBaca, C., Orsmeth, T., & Quiroz, R. (2014). Noticing for equitable mathematics instruction. Paper presented at the 2014 Association of Mathematics Teacher Educators (AMTE) Conference, Irvine, CA.
- Hand, V. (2013). Noticing in equitable mathematics instruction. Paper presented in Symposium at the 2013 American Educational Research Association Conference, San Francisco, CA.
- Hand, V. (2013). Narrowing participation gaps in mathematics classrooms. Paper presented in Symposium at the 2012 American Educational Research Association Conference, San Francisco, CA.
- Hand, V. & Barr, S. (2012). Taking up space in the mathematics classroom: developing practice-linked identities. Paper presented in Symposium at the 2012 National Council of Teachers of Mathematics Conference.



- Hand, V. (2012). Dispositions of mathematics teachers towards culture, power and mathematics learning. Paper presented at the 1st Mathematics Education and Contemporary Theory Conference, Manchester, UK.
- Hand, V., Penuel, W., Gutiérrez, K. (2012). Re-framing as a means of re-locating opportunities to learn in multilevel educational systems. Paper presented in Symposium at the 2012 American Educational Research Association Conference, Vancouver, B.C.
- Hand, V. & Harris, L. (2012). Re-framing the achievement gap in STEM education. Professional Development Seminar held at the Teachers of Colors and Allies Summit, Boulder, Colorado.
- Hand, V. & Barr, S. (2011). "You, us, them": (re)framing the system of mathematics education in classroom mathematical discourse. Paper presented in Symposium at the 2011 American Educational Research Association Conference, New Orleans, Louisiana.
- Hand, V. & Harris, L. (2011). Mathematics teacher preparation and perspectives on the relations between culture, power and mathematics learning. Paper presented at the 2011 National Council of Mathematics Teachers, Indianapolis, Indiana.
- Hand, V. (2010). Conceptual agency, self-expression & status: levels of mathematical competence. Paper presented at the 2010 National Council of Mathematics Teachers, San Diego, California.
- DiME (2008). Foregrounding issues of equity and diversity in mathematics education research: implications for research methods and teacher development. Professional Development Seminar held at the 2008 American Educational Research Association Conference, San Diego, California.
- Bartell, T., Bannister, V., Battey, D., Hand, V. & Spencer, J. (2007). Theorizing race and power in mathematics education. Paper presented at the 2007 American Educational Research Association Conference, Chicago, Illinois.
- Brewley-Corbin, D., Hand, V. & Aguierre, J. (2007). Promises and challenges of equity in teacher education and professional development. Paper presented at the 2007 National Council of Mathematics Teachers, Atlanta, Georgia.
- Hand, V. (2005). Race, culture, and the construction of opposition in mathematics classrooms. Paper presented at the 2005 American Educational Research Association Annual Conference.
- Hand, V. (2004). Re-framing participation: meaningful mathematical activity. Presented at the 2004 American Educational Research Association Annual Meeting.
- Hand, V. (2003). The development of third spaces in mathematical activity. Presented at the 2003 American Educational Research Association Annual Meeting.

Boaler, J., Hand, V., Sommerfeld, M.C. & Staples, M. (2001). Agency and authority in reform visions of mathematics teaching. Paper presented in Symposium at the 2001 American Educational Research Association Annual Conference.

#### Invited talks & webinars

Hand, V., Mendoza, E. & TenEyck, J. (2019). Towards re-humanizing mathematics education: participatory approaches to noticing in mathematics classrooms. Invited talk. Michigan State University.

Hand, V. (2017). A sociocultural perspective on knowing and learning. Invited national webinar. UTeach Institute

Hand, V., van Es, E. & Mercado, J. (2017). "Looking beyond ourselves: Teacher noticing for equity in secondary mathematics classrooms. Mathematical Sciences and Research Institute, Berkeley, CA.

Hand, V. (2015). A sociocultural perspective on knowing and learning. Invited national webinar. UTeach Institute

Hand, V. (2015). Equity in mathematics teaching. Invited presentation. Teachers Development Group 2015 Leadership Seminar on Mathematics Professional Development. Portland, Oregon

Hand, V. (2014). Narrowing classroom participation gaps. Invited presentation. Strand on Equity, Culture and Social Justice, National Council for Teachers of Mathematics (NCTM) Regional Conference, Houston, Texas.

Hand, V. (2012). A sociocultural perspective on knowing and learning in STEM. Invited presentation. UTeach National Conference, Houston, Texas.

Hand, V. (2011). We are what we teach. Invited presentation, UTeach National Conference, Houston, Texas.

Hand, V. (2011). You, me, them: (re)framing the system of mathematics education in classroom mathematical discourse. Invited talk, College of Education, University of Maryland.

Hand, V. (2007). The participation gap: creating equitable opportunities to learn in K12 mathematics classrooms. Invited presentation, Wisconsin Department of Public Instruction, Madison, Wisconsin.

Hand, V. (2005). Constructing resistance: the role of students' cultural practices in creating opportunities for resistance to mathematics learning. Invited presentation, Center for Teaching and Learning Meeting, Washington, D.C.

\*Author was graduate student or teacher.

## International/National

Associate Editor, American Educational Research Journal, 2021 --  
Committee Member, Minority Dissertation Fellowship, AERA, 2021 --  
Chair, SIG Research in Mathematics Education, 2022-2023  
Co-Chair, SIG Research in Mathematics Education, 2021-2022  
Panelist, 2018 NAEP Framework for Mathematics Revisioning Committee  
Strand Leader, ICLS 2020, Learning and Identity  
Strand Leader, PME-NA 2017, Teaching and Learning  
Chair, Awards Committee, Research in Mathematics Education SIG, American Educational Research Association (AERA)  
Co-chair, Special Events, International Conference of the Learning Sciences  
Committee Member, Research Related to Practice Award, AERA  
Committee Member, Appointment of Division G Secretary, AERA  
Conference Reviewer: AERA, Divisions C&G, SIG-RME, International Conference of the Learning Sciences, National  
Council of Teachers of Mathematics, Psychology of Mathematics Education-North America Chapter  
Ad-Hoc Reviewer: American Educational Research Journal, Canadian Journal for Science, Mathematics, and Technology Education, Cognition and Instruction, Educational Studies in Mathematics, Human Development, Journal of Teacher Education, Journal of Research in Mathematics Education, Journal for Mathematics Teacher Education, Journal of the Learning Sciences, Journal of Teacher Education, Mathematical Thinking and Learning  
Grant Reviewer: The Spencer Foundation, DR K-12, National Science Foundation; FIRE, National Science Foundation; TUES, National Science Foundation

## University

Chair, STEM Education, 2019 --  
Co-Chair, CU Teach, 2021-2022  
Member, Dean's Advisory Council, 2019 —  
Member, Graduate School Executive Advisory Council, 2018 — 2022  
Member, Campus Ethics Committee, Faculty Board, 2008-2013  
Member, Salary Committee  
Member, Miramontes Selection Committee, 2009-2016  
Member & Chair, School of Education Climate Committee, 2012-2019

## Community

Member, Diversity, Inclusion, and Equity Committee, Geneva Glen Camp