

MARÍA GONZÁLEZ-HOWARD

University of Texas at Austin
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EDUCATION

- Boston College**, Chestnut Hill, MA
Ph.D., Curriculum and Instruction 2017
Dissertation title: *Interactional patterns in argumentation discussions: Teacher and student roles in the construction and refinement of scientific arguments*
Committee Members: Katherine L. McNeill (chair), C. Patrick Proctor, Kristen Bottema-Beutel
- Boston University**, Boston, MA
Ed.M., Teaching English to Speakers of Other Languages 2011
- Ithaca College**, Ithaca, NY
B.A. *cum laude*
Major: Physics, Minors: Mathematics, Anthropology 2008

PROFESSIONAL APPOINTMENTS

- University of Texas at Austin**, Austin, TX
Assistant Professor, STEM Education 2017-present
- Boston College**, Chestnut Hill, MA
Graduate Student Research Assistant 2011-2017
Teaching Assistant – ED 2109 Teaching about the Natural World 2014-2016
Instructor – ED 2109 Teaching about the Natural World Fall 2015
- Sauceda Middle School**, Donna, TX
8th Grade Science Teacher, Teach for America Corps Member 2008-2010

PUBLICATIONS IN PEER-REVIEWED JOURNALS

González-Howard, M. & McNeill, K. L. (2019). Teachers' framing of argumentation goals: Working together to develop individual versus communal understanding. *Journal of Research in Science Teaching*, 56(6), 821-844.

Loper, S., McNeill, K. L., **González-Howard, M.**, Marco-Bujosa, L. & O'Dwyer, L. M. (2019). The impact of multimedia educative curriculum materials (MECMs) on teachers' beliefs about scientific argumentation. *Technology, Pedagogy and Education*, 28(2), 173-190.

González-Howard, M. (2019). Exploring the utility of social network analysis for visualizing interactions during argumentation discussions. *Science Education*, 103(3), 503-528.

González-Howard, M., Marco-Bujosa, L., McNeill, K. L., Goss, M. & Loper, S. (2018). The Argumentation Toolkit: A resource for integrating argumentation into your science classroom. *Science Scope*, 42(3), 74-78.

- Wagner, C. J. & **González-Howard, M.** (2018). Studying discourse as social interaction: The potential of social network analysis for discourse studies. *Educational Researcher*, 47(6), 375-383.
- McNeill, K. L., Marco-Bujosa, L., **González-Howard, M.** & Loper, S. (2018). Teachers' enactments of curriculum: Fidelity to procedure versus fidelity to goal for scientific argumentation. *International Journal of Science Education*, 40(12), 1455-1475.
- Henderson, B. J., McNeill, K. L., **González-Howard, M.**, Close, K. & Evans, M. (2018). Key challenges and future directions for research on scientific argumentation. *Journal of Research in Science Teaching*, 55(1), 5-18.
- Marco-Bujosa, L., **González-Howard, M.**, McNeill, K. L. & Loper, S. (2017). Designing and using multimedia modules for teacher educators: Supporting teacher learning of scientific argumentation. *Innovations in Science Teacher Education*, 2(4), 1-13.
- McNeill, K. L., **González-Howard, M.**, Katsh-Singer, R. & Loper, S. (2017). Moving beyond pseudoargumentation: Teachers' enactments of a science curriculum focused on argumentation. *Science Education*, 101(3), 426-457.
- González-Howard, M.**, McNeill, K. L., Marco-Bujosa, L., & Proctor, C. P (2017). 'Does it answer the question or is it French fries?': An exploration of language supports for scientific argumentation. *International Journal of Science Education*, 39(5), 528-547.
- Loper, S., McNeill, K. L. & **González-Howard, M.** (2017). Multimedia educative curriculum materials (MECMs): Teachers' choices in using MECMs designed to support scientific argumentation. *Journal of Science Teacher Education*, 28(1), 36-56
- Marco-Bujosa, L., McNeill, K. L., **González-Howard, M.** & Loper, S. (2017). An exploration of teacher learning from an educative reform-oriented curriculum: Case studies of teacher curriculum use. *Journal of Research in Science Teaching*, 54(2), 141-168.
- McNeill, K. L., Katsh-Singer, R., **González-Howard, M.**, & Loper, S. (2016). Factors impacting teachers' argumentation instruction in their science classrooms. *International Journal of Science Education*, 38(12), 2026-2046.
- González-Howard, M.** & McNeill, K. L. (2016). Learning in a community of practice: Factors impacting English-learning students' engagement in scientific argumentation. *Journal of Research in Science Teaching*, 53(4), 527-533.
- McNeill, K. L., **González-Howard, M.**, Katsh-Singer, R. & Loper, S. (2016). Pedagogical content knowledge of argumentation: Using classroom contexts to assess high quality PCK rather than pseudoargumentation. *Journal of Research in Science Teaching*, 53(2), 261-290.
- González-Howard, M.**, McNeill, K. L. & Ruttan, N. (2015). "What's our three-word claim?": Supporting English-language learning students' engagement in scientific argumentation. *Science Scope*, 38(9), 10-16.

INVITED BOOK CHAPTERS

- González-Howard, M.**, & McNeill, K.L. (2019). Supporting linguistically diverse students in scientific argumentation across writing and speaking. In Spycher, P. & Haynes, E. (Eds.). *Culturally and linguistically diverse learners and STEAM: Teachers and researchers working in partnership to build a better path forward*. (pp. 77-94). Charlotte, NC: Information Age Publishing.

OTHER PAPERS IN PROGRESS

[†]indicates that author was an undergraduate or graduate student at the time of publication

[†]David, B., Marder M., Marshall, J., & **González-Howard, M.** (Under Review). How do students experience choice? Exploring course-offerings and course-taking patterns in Texas charter and non-charter public schools. *Education Policy Analysis Archives*.

González-Howard, M. & McNeill, K. L. (In preparation). Acting with epistemic agency: Characterizing student critique during argumentation.

González-Howard, M., Sampson, V., [†]Baze, C. & [†]Chu, L. (In preparation). Student interactions during argument-driven engineering: Creating spaces for students to develop epistemic agency.

González-Howard, M., Sampson, V. [†]Sosa-Ramirez, J. & [†]Baze, C. (In preparation). Teachers' experiences understanding and supporting student epistemic agency.

Spycher, P., August, D. & **González-Howard, M.** (In preparation). Content instruction with integrated and designated ELD in the secondary grades. In *Improving education for English learners: Research to practice*.

AWARDS & FELLOWSHIPS

Office of the Vice Provost for Diversity's Fellowship Recipient for participating in the National Center for Faculty Development & Diversity's Faculty Success Program	Fall 2018
NARST Jhumki Basu Scholar Award	March 2018
Boston College Lynch School of Education Dissertation Fellowship	2016-2017
Boston College Donald J. White Teaching Excellence Award	May 2016
Community for Advancing Discovery Research in Education (CADRE) Fellow	2015-2016

PEER-REVIEWED CONFERENCE PAPERS & PRESENTATIONS

González-Howard, M. & McNeill, K. L. (2018, March). *Framing goals for argumentation discussions: Individual versus communal understanding*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Atlanta, GA.

González-Howard, M. & McNeill, K. L. (2017, April). *Variation in how teachers support student critique in argumentation discussions*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, San Antonio, TX.

Marco-Bujosa, L., McNeill, K. L., González-Howard, M. & Loper, S. (2017, April). *Teacher learning from a reform-oriented science curriculum: An exploration of teacher curriculum use*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, San Antonio, TX.

McNeill, K. L., González-Howard, M., Marco-Bujosa, L., Loper, S. & O'Dwyer, L. (2017, April). *An examination of how teachers' beliefs about scientific argumentation are impacted by multimedia educative curriculum materials (MECMs)*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, San Antonio, TX.

González-Howard, M. & McNeill, K. L. (2016, April). *Using social network analysis to examine interactional patterns in scientific argumentation*. Paper presented at the annual meeting of the American Educational Research Association, Washington, DC.

González-Howard, M. & McNeill, K. L. (2016, April). *Student engagement in scientific argumentation in a sheltered English instruction classroom community*. Poster presented at the annual meeting of the American Educational Research Association, Washington, DC.

McNeill, K. L., Marco-Bujosa, L., González-Howard, M. & Loper, S. (2016, April). *Curriculum implementation for scientific argumentation: Fidelity to procedure versus fidelity to goals*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Baltimore, MD.

González-Howard, M. & McNeill, K. L. (2015, April). *Expanding metrics of equity: An exploration of how classroom structures relate to English-language learning students' engagement in scientific discourse*. Paper presented at the annual meeting of the New England Educational Research Organization, Portsmouth, NH.

González-Howard, M. & McNeill, K. L. (2015, April). *Successes and challenges experienced by a teacher and her students engaging in scientific argumentation in a sheltered English immersion classroom*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Chicago, IL.

Katsh-Singer, R., Knight, A., González-Howard, M., & McNeill, K. L. (2015, April). *Designing a measure of teacher belief about student ability to engage in scientific argumentation*. Poster presented at the annual meeting of the National Association for Research in Science Teaching, Chicago, IL.

González-Howard, M. & McNeill, K. L. (2014, June). *Intersections of science learning and language development within scientific argumentation: Implications for English language learners*. Poster presented at the International Conference of the Learning Sciences, Boulder, CO.

McNeill, K. L., González-Howard, M., Katsh-Singer, R. & Loper, S. (2014, March). *Measuring pedagogical content knowledge of argumentation through the development of a teacher argumentation assessment*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Pittsburgh, PA.

McNeill, K. L., González-Howard, M., Katsh-Singer, R., Price, J. F. & Loper, S. (2013, April). *Teachers' beliefs and practices around argumentation during a curriculum enactment*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Puerto Rico.

McNeill, K. L., Katsh-Singer, R., González-Howard, M., Price, J. F., & Loper, S. (2013, April). *Factors that impact teachers' argumentation instruction in their classroom*. Poster presented at the annual meeting of the American Educational Research Association, San Francisco, CA.

INVITED PANELS & PRESENTATIONS

González-Howard, M., Wright, C., Buxton, C., Bang, M. & DeBarger, A. (2018, November). *Research promoting equity in science classrooms, educational systems, and communities*. Panel discussion at the Advancing Coherent and Equitable Systems of Science Education (ACESSE) 50 II Conference, Boulder, CO.

González-Howard, M. (2015, June). *Argumentation in the science classroom: Supporting students in justifying claims with evidence and reasoning*. Presented at The Maine Center for Research in STEM Education's summer conference, The University of Maine, Orono, ME.

PEER-REVIEWED WORKSHOPS

González-Howard, M. (2018, November). *The Argumentation Toolkit: Multimedia resources for supporting students in talking about their evidence and reasoning*. Workshop presented at the annual meeting of the Science Teachers Association of Texas, Fort Worth, TX.

González-Howard, M., McNeill, K. L., Marco-Bujosa, L. & Loper, S. (2018, March). *Engaging in scientific argumentation: How do I support my students in articulating their reasoning?* Workshop presented at the annual meeting of the National Science Teachers Association, Atlanta, GA.

González-Howard, M., McNeill, K. L. & Loper, S. (2017, April). *Argumentation toolkit: Resources for developing a classroom culture for scientific argumentation.* Workshop presented at the annual meeting of the National Science Teachers Association, Los Angeles, CA.

González-Howard, M., Pelletier, P. & McNeill, K. L. (2017, April). *Learning to integrate science practices in K-12 classroom instruction.* Workshop presented at the annual meeting of the National Science Teachers Association, Los Angeles, CA.

González-Howard, M. (2015, June). *Using the claim-evidence-reasoning framework to support students' written and spoken arguments.* Workshop presented at The Maine Center for Research in STEM Education's summer conference, The University of Maine, Orono, ME.

González-Howard, M. & McNeill, K. L. (2015, March). *I introduced the claim-evidence-reasoning framework...Now what?* Workshop presented at the annual meeting of the National Science Teachers Association, Chicago, IL.

Katsh-Singer, R., Pimentel, D., McNeill, K. L., & González-Howard, M. (2014, April). *Supporting all students in writing scientific arguments.* Workshop presented at the annual meeting of the National Science Teachers Association, Boston, MA.

INVITED WORKSHOPS

González-Howard, M. (2017, May). *Integrating science practices with disciplinary core ideas around waves.* Workshop presented to the Shrewsbury Public Schools, Shrewsbury, MA.

González-Howard, M. & Bleck, E. (2016, Nov.) *Using the claim-evidence-reasoning framework to support students in explanation and argumentation.* Workshop presented to the secondary science methods course at the Harvard Graduate School of Education, Cambridge, MA.

González-Howard, M. (2016, Aug.) *Figuring out the natural world: Engaging elementary students in science practices.* Workshop presented to the Shrewsbury Public Schools, Shrewsbury, MA.

González-Howard, M. & Katsh-Singer, R. (2016, June). *Designing practice-based science instruction for elementary students.* Workshop series presented to the Shrewsbury Public Schools Summer Institute, Shrewsbury, MA.

McNeill, K, Rosa, H., Pelletier, P., & González-Howard, M. (2016, Feb. – May). *Science practices working group: Designing online professional development.* Workshop series presented to the Boston Public Schools, Boston, MA.

González-Howard, M. (Nov. 2015 – March 2016). *Engaging elementary students in NGSS science practices.* Workshop series presented to Westborough Public Schools, Westborough, MA.

González-Howard, M. (2015, April). *NGSS science practices for elementary students.* Workshop presented to Westborough Public Schools, Westborough, MA.

McNeill, K. L. & González-Howard, M., & Pelletier, P. (2015, March – May). *Teaching and learning with the science and engineering practices.* Workshop series presented to the Boston Public Schools, Boston, MA.

González-Howard, M. & Katsh-Singer, R. (2015, Feb.) *Supporting students in the scientific practices of explanation and argumentation.* Workshop presented to Westborough Public Schools, Westborough, MA.

McNeill, K.L. & González-Howard, M. (2014, April). *Engaging in science practices: Explanation and argumentation*. Workshop presented at the Museum of Science, Boston, MA.

McNeill, K. L. & González-Howard, M. (2014, March). *Engaging in argument in science: Supporting students in arguments across writing, talking and reading*. Workshop presented to the Boston Public Schools, Boston, MA.

McNeill, K. L. & González-Howard, M. (Nov. 2012 – Feb. 2013). *Argumentation in history and science*. Workshop series presented at Brown Middle School, Newton, MA.

Pimentel, D. S., Katsh-Singer, R., & González-Howard, M. (2012, July). *Making sense of data through scientific argumentation*. Workshop presented as part of a collaboration between Boston College and Associazione Italiana Maestri Cattolici at Boston College, Chestnut Hill, MA.

WEBSITES

Argumentation Toolkit (developed 2015 – 2017). <http://www.argumentationtoolkit.org>

BPS Science Practices (developed 2015 – 2017). <http://bpssciencepractices.weebly.com>

CONTRACTS AND GRANTS

The development and study of OpenSciEd middle school instructional materials focused on multilingual students (6/2019-8/2020). Awarded \$22,365 to identify and develop strategies for supporting emerging multilingual students' scientific sensemaking, and to investigate teachers' uptake of these strategies. Funded by the National Center for Civic Innovation; Sub-award granted by BSCS Science Learning. PI: María González-Howard.

Exploring and developing pre-service teachers' understandings of equitable pedagogies for supporting elementary students in scientific argumentation (1/2019 – 12/2019). Awarded \$10,000 to conduct a pilot study focused on supporting elementary pre-service teachers in engaging in equitable and rigorous science teaching. Funded by The University of Texas at Austin, College of Education – Small Grants Program. PIs: María González-Howard and Tia Madkins.

The development of a new instructional approach to teach engineering in middle school science classrooms (9/2016 – 8/2019). Awarded \$349,712 to develop a new instructional approach that helps middle school student learn engineering design in science classrooms. Funded by the National Science Foundation, EEC Program (Award Number: NSF 1607916; OSP Number: 2-1503424-001). PI: Victor Sampson. Co-PIs: Richard Crawford, Catherine Riegle-Crumb, and María González-Howard.

PROFESSIONAL MEMBERSHIPS

National Association for Research in Science Teaching, since 2012

American Educational Research Association, since 2013

National Science Teachers Association, since 2013

International Society of the Learning Sciences, since 2014

New England Educational Research Organization, 2015-2017

PROFESSIONAL SERVICE

Member, Equity and Ethics Committee

2019-2022

National Association for Research in Science Teaching

Review Journal Articles

- *Journal of Research in Science Teaching*, 2015 to present
- *Science Education*, 2016 to present
- *International Journal of Science Education*, 2017 to present
- *Technology, Pedagogy and Education*, 2018 to present
- *Teaching and Teacher Education*, 2018 to present
- *Journal of Science Education and Technology*, 2019 to present

Review Grant Proposals

- National Science Foundation (NSF), 2019

Review Conference Proposals

- Annual meeting of the National Association of Research in Science Teaching, 2013 to present
- Annual meeting of the American Educational Research Association, 2017 to present

CONSULTING

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| OpenSciEd Project | Summer 2018 |
| <ul style="list-style-type: none">• Part of a small working group of experts tasked with developing specifications for the OpenSciEd curriculum developers around the science practices of argumentation and obtaining, evaluating and communicating information | |
| Westborough Public Schools, MA | 2015-2016 |
| <ul style="list-style-type: none">• Advised district leaders on science curriculum selection and implementation• Conducted professional development around the science practices for preK-6 science teachers | |
| Boston Debate League, MA | August 2014 |
| <ul style="list-style-type: none">• Created 4 assessments (2 pre-assessments and 2 post-assessments) to assess the organization's evidence-based argumentation skill progression for grades 9-12 | |

COLLEGE AND DEPARTMENT SERVICE

- | | |
|---|-----------------|
| Member, Applied Learning and Development Committee
College of Education, <i>The University of Texas at Austin</i> | 2018-2019 |
| Member, Faculty Search Committee, STEM Education Search
Department of Curriculum and Instruction, <i>The University of Texas at Austin</i> | 2018-2019 |
| Member, Graduate Studies Committee (GSC)
Department of Curriculum and Instruction, <i>The University of Texas at Austin</i> | 2017 to present |
| Member, Nominating Committee for the GSC
Department of Curriculum and Instruction, <i>The University of Texas at Austin</i> | 2017 to present |
| Member, STEM Education Program Graduate Studies Committee
Department of Curriculum and Instruction, <i>The University of Texas at Austin</i> | 2017 to present |
| Member, Social Justice Praxis Committee
Department of Curriculum and Instruction, <i>The University of Texas at Austin</i> | 2017 to present |

TEACHING AND MENTORING

Undergraduate Courses:

- EDC 370E: Elementary Science Methods

María González-Howard

- EDC 370E: Elementary Science Methods *for pre-service teachers seeking bilingual certification

Graduate Courses:

- STM 390T: Advanced Topics – Social Network Analysis in Educational Research

Dissertation Committees (*in progress*): Bernard David, STEM Education; Jennifer Jordan Kaszuba, STEM Education; Kemper Lipscomb, STEM Education

LANGUAGE PROFICIENCY

Native Spanish-speaker; Oral, reading, and written fluency in Spanish