Jennifer Richards
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ACADEMIC POSITIONS

July 2014-present *Research Associate* in Science Teacher Learning and Development, College of Education, University of Washington, Seattle, WA
- Advisors: Jessica Thompson, Elham Kazemi

July 2013-July 2014 *Research Associate* in Science Education, College of Education, University of Maryland, College Park, MD
- Advisor: Andrew Elby

EDUCATION

August 2013 *Doctor of Philosophy*, Curriculum and Instruction with a specialization in Science Education, University of Maryland, College Park, MD
- Advisors: Andrew Elby, David Hammer
- Dissertation: Exploring what stabilizes teachers' attention and responsiveness to the substance of students' scientific thinking in the classroom

August 2008 *Master of Education*, Curriculum and Instruction with a specialization in Secondary Science Education, University of Maryland, College Park, MD
- Action Research: Using metacognitive prompts to foster students' conceptual understanding during science labs

May 2006 *Honors Bachelor of Arts* (summa cum laude), Biological Sciences and Political Science/International Relations, University of Delaware, Newark, DE

AWARDS AND FELLOWSHIPS

University of Maryland **College Park, MD**

Runner Up, College of Education's Outstanding Doctoral Student Award, May 2013

Recipient, Disciplinary Experts in Science Education Research: A University of Maryland Program for Producing STEM Education Researchers, 2008-2013: NSF-funded fellowship providing full funding for five years of graduate work in science education

RESEARCH AND SCHOLARLY ACTIVITIES

[+]Indicates collaborations with graduate students, *indicates collaborations with teachers, [c]indicates co-first authorship

Peer-Reviewed Journal Articles and Conference Proceedings

[c]**Richards, J.,** Elby, A., Luna, M., Robertson, A. D., Levin, D. M., & Nyeggen, C. (under review). Reframing the responsiveness challenge: What prevents novice teachers from attending and responding to the substance of students' thinking?

Conlin, L. D., **Richards, J.**, Gupta, A., & Elby, A. (under revision). "Bring it on": Explaining persistence in science at the intersection of identity and epistemology.

Robertson, A., & **Richards, J.** (2017). Teacher sense-making about being responsive to students' science ideas: A case study. *European Journal of Science and Mathematics Education, 5*(4), 314-342.

*__Richards, J.__, Johnson, A., & Nyeggen, C. G. (2015). Inquiry-based science and the Next Generation Science Standards: A magnetic attraction. *Science and Children*, *52*(6), 54-58.

Richards, J., Elby, A., & Gupta, A. (2014). Characterizing a new dimension of change in attending and responding to the substance of student thinking. In J. L. Polman, E. A. Kyza, D. K. O'Neill, I. Tabak, W. R. Penuel, A. S. Jurow, K. O'Connor, T. Lee, & L. D'Amico (Eds.), *Learning and becoming in practice: The International Conference of the Learning Sciences (ICLS) 2014, Volume 1* (pp. 286-293). Boulder, CO: International Society of the Learning Sciences.

Richards, J. (2014). The role of affect in sustaining teachers' attention and responsiveness to student thinking. In P. V. Engelhardt, A. D. Churukian, & D. L. Jones (Eds.), *2013 Physics Education Research Conference Proceedings* (pp. 301-304).

Richards, J., Conlin, L., Gupta, A., & Elby, A. (2013). Coupling epistemology and identity in explaining student interest in science. In S. Rebello, P. Engelhardt, & A. D. Churukian (Eds.), *2012 Physics Education Research Conference* (AIP Conf. Proc. 1513, pp. 334-337). Melville, NY: American Institute of Physics.

Levin, D. M., & **Richards, J.** (2011). Learning to attend to the substance of student thinking in science: A case study of a preservice secondary science teaching cohort. *Science Educator, 20*(2), 1-11.

Book Chapters

Richards, J. & Robertson, A. D. (2016). A review of the research on responsive teaching in science and mathematics. In A. D. Robertson, R. Scherr, & D. Hammer (Eds.), *Responsive Teaching in Science and Mathematics.* Teaching and Learning in Science Series. New York, NY: Routledge.

Robertson, A. D., **Richards, J.**, Elby, A., & Walkoe, J. (2016). Documenting variability *within* teacher attention and responsiveness to the substance of student thinking. In A. D. Robertson, R. Scherr, & D. Hammer (Eds.), *Responsive Teaching in Science and Mathematics*. Teaching and Learning in Science Series. New York, NY: Routledge.

Robertson, A. D., Atkins, L. J., Levin, D. M., & **Richards, J.** (2016). What is responsive teaching? In A. D. Robertson, R. Scherr, & D. Hammer (Eds.), *Responsive Teaching in Science and Mathematics*. Teaching and Learning in Science Series. New York, NY: Routledge.

Other Publications

+*Vaa, K., Shim, S., **Richards, J.**, & Thompson, J. (2017, May 5). Integrating Scientific Argumentation and Modeling for K-2 Learners [Web log post]. Retrieved from https://www.teachingchannel.org/blog/2017/05/05/sci-argumentation-modeling-k-2/.

Thompson, J., & **Richards, J.** (2016, May 27). Modeling in Science: K-2 [Web log post]. Retrieved from https://www.teachingchannel.org/blog/2016/05/27/modeling-in-science-nsf/.

Elby, A., Gupta, A., Conlin, L., & **Richards, J.** (2013). Inquiry-based professional development for a diverse population. American Physical Society Forum on Education Summer 2013 Newsletter. http://www.aps.org/units/fed/newsletters/summer2013/inquiry.cfm.

Invited Presentations and Workshops

Richards, J. (2017). Designing for meaningful collaboration online in a blended PD model. Talk given at Tch TeamsFest, Lowell, MA.

Richards, J. (2016). Exploring job-embedded professional learning through Studio Days. Plenary given at the Foundations and Frontiers of Physics Education Research: Puget Sound Conference, Diablo, WA.

Richards, J. (2015). Learning *from* and *with* teachers about supporting and improving ambitious science instruction. Talk given at the University of Washington and Seattle Pacific University Physics Education Seminar, Seattle, WA.

*Thompson, J., **Richards, J.**, & Sjoberg, B. (2015). Measurement for improvement in networked communities. Talk given at the 2015 Design-Based Implementation Research (DBIR) Workshop, Boulder, CO.

Elby, A., Gupta, A., & **Richards, J.** (2014). Assessing whether and how professional development affects teachers' classroom practices. Talk given at the 2014 American Association of Physics Teachers Winter Meeting, Orlando, FL.

Richards, J. (2014). Preparing and supporting LAs: LA pedagogy seminar. Session facilitated at the 2014 Mid-Atlantic Learning Assistant Workshop, College Park, MD.

Richards, J., & Conlin, L. D. (2013). When feist and frustration spark substantive engagement. Talk given at the 2013 American Association of Physics Teachers Summer Meeting, Portland, OR.

Select Contributed Conference Presentations and Workshops

Richards, J. (2017). Exploring varied approaches to supporting responsive teaching in science and mathematics. Organizer/chair of structured poster session (11 posters) held at the 2017 American Educational Research Association Annual Meeting, San Antonio, TX.

[+]**Richards, J.**, Fox, A., Shim, S., Anderson, E., Dobie, T., Sherin, B., Lee, J., Thompson, J. J., Kazemi, E., Lomax, K., & Sherin, M. G. (2017). Designing for K-2 teacher learning about modeling in practice-based online courses. Paper presented at the 2017 American Educational Research Association Annual Meeting, San Antonio, TX.

[+]*Thompson, J., **Richards, J.**, Lohwasser, K., Chew, C., & Sjoberg, B. (2016). Learning and improving Ambitious Science Teaching practices: A longitudinal analysis of job-embedded PD with six schools. Paper presented at the 2016 NARST Annual International Conference, Baltimore, MD.

Richards, J. & Thompson, J. (2016). Real-time responsiveness: Exploring how teams of teachers reason with students' ideas in situ. Paper presented at the 2016 American Educational Research Association Annual Meeting, Washington, D.C.

[+]Thompson, J., Von Esch, K. S., **Richards, J.,** Van Windekens, A., Lohwasser, K., & Varghese, M. (2016). Opening spaces for inquiry and noticing language: Negotiating tools and EL/science teaching practices. Paper presented at the 2016 American Educational Research Association Annual Meeting, Washington, D.C.

[+]Lomax, K., **Richards, J.,** Fox, A., & Salgado, M. (2015). Modeling in math and science with young children. Talk given at the Washington Educational Research Association Annual Conference, Seattle, WA.

Ryu, M., Sikorski, T., **Richards, J.,** & Jaber, L. Z. (2015). Watching a student challenging evolutionary theory: Insights gleaned from collaborative data analysis. Poster presented at the 2015 American Educational Research Association Annual Meeting, Chicago, IL.

[+]Thompson, J., Lohwasser, K., **Richards, J**., Von Esch, K. S., Van Windekens, A., Varghese, M. (2015). Building capacity for NGSS through Networked Improvement Communities. Paper presented at the 2015 NARST Annual International Conference, Chicago, IL.

*Thompson, J., Sjoberg, B., Lohwasser, K., & **Richards, J.** (2015). Building capacity for science standards through Networked Improvement Communities. Talk given at the 2015 Carnegie Foundation Summit on Improvement in Education, San Francisco, CA.

Robertson, A. D., & **Richards, J.** (2015). Novice teacher sense-making about responsive teaching: Important points in the development of language and

practice. Poster presented at the 2015 Physics Teacher Education Coalition Conference, Seattle, WA.

Richards, J., Gupta, A., & Elby, A. (2014). Shifting to authentic scientific inquiry: Unpacking three stories of teacher change. Paper presented at the 2014 NARST Annual International Conference, Pittsburgh, PA.

Jaber, L., Sawtelle, V., **Richards, J.**, Conlin, L., Gupta, A., Turpen, C., & Nissen, J. (2013). Fleeting but powerful: How affect matters for teaching, learning, and doing physics. Workshop conducted at the 2013 Physics Education Research Conference, Portland, OR.

Ryu, M., Sikorski, T., **Richards, J.**, & Jaber, L. (2013). Controversy in an AP biology class: Looking beyond content knowledge and religiosity. Symposium presented at the National Association for Research in Science Teaching 2013 Annual International Conference, Rio Grande, Puerto Rico.

Richards, J. (2013). Exploring what sustains teachers' attention and responsiveness to students' scientific thinking in the classroom. Poster presented at the National Association for Research in Science Teaching 2013 Annual International Conference, Rio Grande, Puerto Rico.

Conlin, L., Jaber, L., **Richards, J.**, Ryu, M., Hammer, D., Danielak, B., & Watkins, J. (2012). Identifying identity: Using video analysis to track the dynamics of students' identities in the learning of physics. Workshop conducted at the 2012 Physics Education Research Conference, Philadelphia, PA.

Richards, J., Tseng, N., Hammer, D., & Elby, A. (2012). The role of caring in supporting teachers' attention and responsiveness to the substance of students' scientific thinking. Poster presented at the 2012 Jean Piaget Society Annual Meeting, Toronto, ON.

Richards, J., Levin, D. M., & Hammer, D. (2011). Supporting preservice teachers' reform-based practices: The importance of intellectual and emotional support in a community. Paper presented at the 2011 American Educational Research Association Annual Meeting, New Orleans, LA.

Jaber, L., **Richards, J.**, Conlin, L. D., & Hammer, D. (2011). Promoting generative inquiry in science: The importance of attention and responsiveness to multiple aspects of classroom activity. Paper presented at the National Association for Research in Science Teaching 2011 Annual International Conference, Orlando, FL.

Gillespie, C., Levin, D. M., & **Richards, J.** (2010). Alex's honors physics class: A shift from a "science" to an "engineering" epistemological frame. Poster presented at the 2010 American Educational Research Association Annual Meeting, Denver, CO.

Richards, J., & Levin, D. M. (2010a). Examining the "stickiness" of a teacher certification program focused on attending to student thinking. Paper presented at the 2010 American Educational Research Association Annual Meeting, Denver, CO.

Hammer, D., Levin, D. M., Pritchett, S., & **Richards, J.** (2010). Using case studies of student science learning to develop practices of attending to student

thinking. Workshop conducted at the Association for Science Teacher Education 2010 International Conference, Sacramento, CA.

Richards, J., & Levin, D. M. (2010b). Exploring the relationship between a preservice teacher's view of students and her practices of attending to the substance of student thinking. Poster presented at the Association for Science Teacher Education 2010 International Conference, Sacramento, CA.

Levin, D. M., Gillespie, C., & **Richards, J.** (2009). Understanding how and when novice teachers attend to student thinking. Poster presented at the 2009 American Educational Research Association Annual Meeting, San Diego, CA.

Levin, D. M., & **Richards, J.** (2009). Developing novice teachers' professional vision for science education reform practice. Paper presented at the Association for Science Teacher Education 2009 International Conference, Hartford, CT.

Projects

University of Washington **Seattle, WA**

Research Associate, Learning Labs: Using Videos, Exemplary STEM Instruction and Online Teacher Collaboration to Enhance K-2 Mathematics and Science Practice and Classroom Discourse (NSF DRL 1417757), 2015-present

- Designing, facilitating, and studying blended professional learning for inservice K-2 teachers on engaging in the scientific practices of modeling and argumentation with young students
- Engaging in cross-institutional collaboration with developers at the Teaching Channel and researchers at Northwestern University
- Developing accompanying facilitation materials and partnering with Seattle Public Schools in an adapted model serving approximately 330 K-5 teachers

Research Associate, Building Capacity for Science Standards through Networked Improvement Communities (NSF DRL 1315995), 2014-2017

- Partnered with district and EL collaborators to facilitate 1) job-embedded studio days with middle and high school science teams and 2) network-wide convenings across schools, oriented toward improving ambitious and equitable science teaching practices
- Created practical measures and data systems to track teaching practice and student learning/participation
- Contributed to the project's research agenda, focusing on collaborative teacher discourse about student thinking and instructional practice, and how insights developed and traveled within the NIC

Program Mentor, University of Washington Leonore Annenberg Teaching Fellowship Program, 2014-2015

- Provided ongoing support for fellowship recipients in first few years of teaching

University of Maryland **College Park, MD**

Program Coordinator, University of Maryland Noyce Scholars Program (NSF DUE 1136277 and 1239999), 2013-2014

- Coordinated recruitment, selection, participant activities and placements, and evaluation for all program components (scholarships for undergraduate mathematics and science education majors, as well as internships and tutoring experiences for freshmen and sophomores)
- Facilitated monthly seminar for tutors

Project Manager, Minority Student Pipeline MSP (NSF DUE 0831970), 2011-2014

Research Assistant, 2010-2011

- Planned and facilitated intensive two-week summer workshops and small-group meetings for 4^{th}-8^{th} grade public school teachers aimed at enhancing inquiry science teaching in the classroom
- Provided job-embedded support in participating teachers' classrooms, co-teaching and debriefing lessons
- Conducted case studies of classroom discourse, teachers' responsiveness to student thinking, and historically marginalized students' engagement in sense-making

Research Assistant, What Influences Teachers' Modifications of Curriculum? (NSF DRL 0455711), 2008-2010

- Worked on extension of original project, tracing how novice science teachers came to attend to student thinking and following their practices as they transitioned into their first full-time teaching positions

Grants

Under Review

Advancing Ambitious and Equitable Elementary Science Teaching with a District-Wide Networked Improvement Community (NIC) Model. Proposal submitted to the NSF DRK-12 program in November 2017. J. Thompson (PI), **J. Richards** (Co-PI), E. Sanders (Co-PI), & M. Welch (Co-PI).

- If funded, this partnership between the University of Washington and Seattle Public Schools would cultivate and study a district-wide NIC aimed at 1) advancing elementary science instruction and student learning equitably across 73 elementary schools, and 2) developing sustainable forms of professional capital and infrastructure for elementary science to continue improving within the system. Building from a current pilot of the Learning Labs project (NSF DRL 1417757) with 330 teachers and teacher leaders, we would document the evolution of the model, critical facets that support advances and sustainability in varied contexts, and our own iterative processes as we engage in collaborative improvement work.

Collaborative Research: Investigating Resources and Mechanisms for Responsive Teaching. Proposal submitted to the NSF ECR program in September 2017. A. Robertson (PI), M. Windschitl (PI), & **J. Richards** (Co-PI).

- If funded, this project would build foundational knowledge of what facilitates teachers' engagement in and learning about responsive teaching and by what means, drawing on data from numerous K-12 teacher education and professional development contexts across the United States. Findings would be disseminated in part through a website developed for teacher educators, with accompanying materials and practices.

Awarded

Supplement for *Building Capacity for Science Standards through Networked Improvement Communities* (NSF DRL 1315995). Awarded $116,005 in August 2015.

- This supplement supported the development of a mobile application to enhance the NIC's ability to work with improvement data from classrooms over time.

TEACHING

University

University of Washington **Seattle, WA**

Teaching Assistant, EDTEP523A (Ambitious and Equitable Elementary Science Teaching & Learning), Winter 2015

Teaching Assistant, EDTEP587A (Teaching Science in the Secondary School II), Fall 2014

University of Maryland **College Park, MD**

Teaching Assistant, EDCI606 (Learning and Teaching in the Biological Sciences I), Spring 2014: Biology course for practicing teachers pursuing a masters in STEM education

Instructor, EDCI470 (Learning and Teaching in Science), Fall 2013: Second of three-part secondary science pedagogy course sequence for undergraduates

Instructor, EDCI488D (Mathematics and Science Education: Theory and Practice for Learning Assistants), Fall 2012: Seminar course introducing undergraduate science majors serving as Learning Assistants to educational theory and practice

Teaching Assistant, EDCI488D (Mathematics and Science Education: Theory and Practice for Learning Assistants), 2011-2012

Teaching Assistant, EDCI676 (Reflection and Practice in Secondary School Science Teaching), Spring 2010: Third of three-part secondary science pedagogy course sequence in masters certification program

Teaching Assistant, EDCI675 (Learning and Teaching in Science), Fall 2009: Second of three-part secondary science pedagogy course sequence in masters certification program

University of Delaware **Newark, DE**

Teaching Assistant, COMM/POSC444 (Global Agenda), Spring 2005
Teaching Assistant, COMM/POSC/ENGL467 (Road to the Presidency), Fall 2004
Peer-Led Team Leader, CHEM101/102/103/104 (General Chemistry), 2003-2005: Facilitated peers' learning in problem-based recitation sections

K-12

Certified to teach Biology and Chemistry 7-12 in the state of Maryland

Visiting Co-Teacher (in conjunction with work in partnerships), K-12 Science in Highline Public Schools (Burien, WA), 2014-2016, and 4th-8th Grade Science in Prince George's County Public Schools (Upper Marlboro, MD), 2010-2013. Average frequency of 1 visit every 1-2 weeks during these timeframes.
Co-Teacher, Biology, Chemistry, and Environmental Science at Atholton High School (Columbia, MD), 2007-2009: Full-time co-teaching internship 2007-2008, part-time co-teaching 2008-2009
Long-Term Substitute Teacher, 7th Grade Science at Mount View Middle School (Marriottsville, MD), January-June 2007

Graduate Advising

Outside Committee Member, Ashley N. Murphy, Doctoral Student in Curriculum & Instruction at West Virginia University
Dissertation prospectus: Investigating children's thinking as it travels from everyday experience to formal science learning and teacher practice

SERVICE

Mentoring

2014-present	Mentoring of science education doctoral students involved in ongoing research projects
2011-2015	Informal mentoring of past and present Learning Assistants, Noyce participants, and Annenberg fellows as they pursue various opportunities and career paths
Spring 2014	Mentoring of astronomy education and physics education doctoral students completing semester-long research experiences on K-12 professional development
2013-2014	Faculty advisor for Foundations in Science & Health Tutoring/Mentoring Program, University of Maryland, College

Park, MD: Group of undergraduate biology students aiming to improve science performance at local high schools through tutoring and mentoring activities

- Supported program founder, Fang Cao, in becoming a 2014 Truman Scholar and a 2015 Rhodes Scholar

Professional Memberships

Member of the American Educational Research Association, the International Society of the Learning Sciences, and the National Association for Research in Science Teaching

Reviewing Activities

Current Reviewer: Cognition and Instruction, Journal of the Learning Sciences, Journal of Research in Science Teaching, Physical Review Special Topics - Physics Education Research

Previous Reviewer: American Educational Research Association (Divisions C, K, and SIG Learning Sciences), Association for Science Teacher Education, National Science Foundation, Physics Education Research Conference, UW Royalty Research Fund