
ELIZABETH A. RING-WHALEN

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CAREER OBJECTIVE	To promote the positive and equitable educational experience of students.	
EDUCATION	University of Minnesota	Minneapolis, MN
	PhD in C&I in STEM Ed., Science, May 2017	Sept. 2014-May 2017
	<i>Dissertation Title:</i> Teacher Conceptions of Integrated STEM Education and How They are Reflected in Integrated STEM Curriculum Writing and Classroom Implementation	
	<i>Committee:</i> Gillian Roehrig, Julie Brown, Mark Vagle, Emily Dare	
	Saint Mary’s University of Minnesota	Minneapolis, MN
	Master of Arts Degree in Education	Sept. 2011-July 2013
	University of Alaska, Fairbanks	Fairbanks, AK
	Rural Educator Preparation Partnerships Program	Sept. 2002-May 2004
	Alaska Teaching Certification, May 2004	
	Augustana College	Sioux Falls, SD
	Bachelor of Arts Degree	Sept. 1995-May 1999
	Biology Major supported by Psychology Minor	
AWARDS	2021 International NARST Conference – Research Worth Reading Recognition 2018 International STEM in Education Conference - Best Paper Presented Award 2016-2017 Haugo Scholarship Awardee 2013 Siemen’s STEM Institute Fellow 2011 MnSTA/Medtronic Foundation Science Teacher of the Year Award	
CERTIFICATION	Professional Teaching Certificate Type A	
	Life Sciences	
	Issued by Minnesota Dept. of Ed. and Early Dev.	
	Exp. June 30, 2024	
TEACHING AND ADVISING EXPERIENCE	Assistant Professor of Education	St. Paul, MN
	<i>St. Catherine University</i>	Aug. 2017-May 2021
	Designed and taught fully virtual, hybrid, face-to-face, and integrated content courses to undergraduate and graduate-level students and in-service teachers. Advised elementary and secondary education majors throughout their education program. Supervised and mentored pre-service teachers through their student teaching experiences. Developed and facilitated professional development for in-service teachers and University Faculty. Participated in scholarship and service as required by the University.	
	Curriculum and Instruction STEM Consultant	White Bear Lake, MN
	<i>White Bear Lake Area Schools</i>	Nov. 2016-July 2017
	Analyzed PK-12 science curriculum and provided vision for integration of STEM throughout the curricular scope and sequence. Designed and implemented a multi-district, multi-community STEM event focused on increasing awareness and excitement for STEM and STEM partnerships in schools and communities.	

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**EXPERIENCE
CONT.**

STEM Program Development Consultant
University of Minnesota - Cargill

Minneapolis/St. Paul, MN
Sept. 2016- May 2017

Worked closely with administration and teachers in two different schools to help develop STEM programming as part of an NSF-funded grant focused on STEM.

Curriculum Writing Mentor/Classroom Coach
University of Minnesota – EngrTEAMS, PrepSci

Minneapolis/St. Paul, MN
Sept. 2015-May 2016

Acted as a curriculum writing guide and classroom coach for PK-12 teachers participating in EngrTEAMS, an NSF-funded grant intended to help teachers develop and implement PK-12 integrated STEM curriculum. Acted as a mentor for 1st and 2nd year, in-service teachers working on improving their culturally responsive pedagogy (CRP) and reform-based teaching practices (PrepSci Grant).

Pre-Service and Induction Teacher Mentor
University of Minnesota – M.Ed & TFA Programs

Minneapolis/St. Paul, MN
Sept. 2014-May 2015

Helped mentor teachers enrolled in the secondary science methods course in the Masters of Education program and the Alternative Pathways/Teach for America programs at the University of Minnesota. Met with pre-service/in-service teachers on a weekly basis to guide them through their student teaching/first-year of teaching. Responsible for evaluating the teachers' progress.

Litchfield Public Schools (ISD #465)
Science Teacher

Litchfield, MN
August 2006-June 2014

Taught AP Biology, College Biology, Anatomy & Physiology at the High School and General Science at an Alternative School. Acted as Science Dept. Chair. Helped to develop course syllabi and curricula. Organized/reported departmental information.

Lincoln Public Schools
Science Teacher

Lincoln, NE
August 2005-May 2006

Taught high school biology and chemistry as well as an integrated biology/chemistry course. Introduced layered curricula to the science department.

Northwest Arctic Borough School District
Science Teacher

Kotzebue, AK
Aug. 2004-May 2005

Taught elementary, middle, and high school science. Acted as High School and MS Science Dept. Chair. Helped to develop course syllabi and curricula. Organized/reported departmental information. Organized district science fair.

Northwest Arctic Borough School District
Kindergarten Classroom Aide

Kotzebue, AK
Aug. 2001-May 2003

Assisted the instructor with classroom management and teaching. Worked with students to support their learning. Worked closely with the instructor to develop

and teach lessons.

PROFESSIONAL MEMBERSHIPS

National Association of Research in Science Teaching (NARST)
American Educational Research Association (AERA)
Association of Science Teacher Educators (ASTE)
American Society for Engineering Education (ASEE)
National Education Association (NEA)
National Science Teachers' Association (NSTA)
Minnesota Science Teachers' Association (MnSTA)

LEADERSHIP, SERVICE AND ACTIVITIES

Director of NCSEE (National Center for STEM Elementary Education) – St. Catherine University
Chair of Placement Coordinator Search Committee – St. Catherine University
Integration Committee – St. Catherine University
STEM Strategic Planning Committee – St. Catherine University
edTPA Assessment Committee – St. Catherine University
PSTI Revision Committee – St. Catherine University
Graduate Action Research Committee – St. Catherine University
National Association for Research in Science Teaching (NARST) Annual International Conference Presenter/Attendee (2015-2023)
Association for Science Teacher Education (ASTE) International Conference Presenter/Attendee (2015-2023)
American Educational Research Association (AERA) Annual Conference Presenter/Attendee (2018)
National Science Teachers' Association (NSTA) Annual Conference Presenter/Attendee (2017-2019)
International STEM in Education Conference Presenter/Attendee (2018, 2020)
2016-2023 Reviewer for International NARST Conference Proposals
2016-2023 Reviewer for International ASTE Conference Proposals
2019-2023 Reviewer for National ASEE Conference Proposals
2017-2023 Reviewer for Science Education (Journal)
2018-2023 Reviewer for Journal of Science Teacher Education
2018-2023 Reviewer for International Journal of STEM Education
2018-2023 Reviewer for Journal for STEM Education Research
2019-2023 Reviewer for Journal of Science Education and Technology
2019-2023 Reviewer for Journal of Research in Science, Mathematics and Technology Education
Professional Development Trainer (Science and STEM Education)
- 2020: Owatonna, St. Kate's
- 2019: Owatonna, PLSAS, SPPS, Anoka-Hennepin
- 2018: Christ Lutheran School (White Bear Lake, MN)
- 2018: University of Minnesota STEM PD
- 2015-2016: Anoka Hennepin School District
- 2015: Region 11 Math and Science Teacher Partnerships (MSTP)

FUNDING

Ring-Whalen, E.A. (PI) (Sept. 2018-Aug. 2023). *Design and Development of a K-12 STEM Observation Protocol*, National Science Foundation DRK-12, Amount: \$139,049.

Ring-Whalen, E.A. (2018 FY). *GHR Faculty Global Travel Support*, St. Catherine University, Amount: \$2,000.

Ring-Whalen, E.A. (2017, 2018, 2019 FY). *APDC Travel Support*, St. Catherine University, Amount: \$1400.

Yates, N., & **Ring-Whalen, E.A.** (2019 FY). *APDC Curriculum Development Grant*, St. Catherine University, Amount: \$1200

PROFESSIONAL PUBLICATIONS (*DENOTES GRADUATE STUDENT AT TIME OF WORK)

- *Keratithamkul, K., Roehrig, G.H., Wieselmann, J.R., Dare, E.A., **Ring-Whalen, E.A.** (in review). Examining the effects of race and gender on small-group interactions in STEM classrooms through critical discourse analysis. *American Educational Research Journal*.
- Dare, E.A., Ellis, J.A., Rouleau, M.D., Roehrig, G.H., & Ring-Whalen, E.A. (2022, June). Current practices in K-12 integrated STEM education: A comparison across science content areas and grade-levels (Fundamental). In *Proceedings of the 2022 ASEE Annual Conference and Exposition*. <https://peer.asee.org/40701>
- Roehrig, G.H., Dare, E.A., Wieselmann, J.R., & **Ring-Whalen, E.A.** (2022). The rise of STEM education: STEM curriculum development and implementation. In R. Tierney, F. Rizvi, & Ercikan (Eds), *International Encyclopedia of Education (4th edition)*. Elsevier.
- Wieselmann, J.R., Dare, E.A., Roehrig, G.H., **Ring-Whalen, E.A.** (2022). Measurement instruments of STEM affective learning: A systematic review. In R. Tierney, F. Rizvi, & K. Ercikan (Eds), *International Encyclopedia of Education (4th edition)*. Elsevier.
- Roehrig, G.H., Rouleau, M.D., Dare, E.A., & **Ring-Whalen, E.A.** (2022). Uncovering core dimensions of K-12 integrated STEM. *Research in Integrated STEM Education, 1*, 1-25. <https://doi.org/10.1163/27726673-00101004>
- Roehrig, G., Dare, E.A., Ellis, J.A., & **Ring-Whalen, E.A.** (2021). Beyond the basics: A detailed conceptual framework of integrated STEM. *Disciplinary and Interdisciplinary Science Education Research, 3*(11). <https://doi.org/10.1186/s43031-021-00041-y>
- Roehrig, G.H., Dare, E.A., **Ring-Whalen, E.A.**, Wieselmann, J.R. (2021). Understanding coherence and integration in integrated STEM curriculum. *International Journal of STEM Education, 8*(2), 1-21.
- Wieselmann, J.R., Roehrig, G.H., **Ring-Whalen, E.A.**, & Meagher, T. (2021). Becoming a STEM-focused school district: Administrators' roles and experiences. *Education Sciences, 11*(12), 805. Retrieved from <https://doi.org/10.3390/educsci11120805>
- Dare, E. A., Hiwatig, B., Keratithamkul, K., Ellis, J. A., Roehrig, G. H., Ring-Whalen, E. A., Rouleau, M. D., Faruqi, F., Rice, C., Titu, P., Li, F., Wieselmann, J. R., & Crotty, E. A. (2021). *Improving STEM education: The design and development of a K-12 classroom observation instrument (RTP)*. In *Proceedings of the 2021 ASEE Annual Conference and Exposition*. <https://peer.asee.org/37307>
- Wieselmann, J.R., Dare, E.A., Roehrig, G.H., **Ring-Whalen, E.A.** (2021). There are other ways to help besides using the stuff: Using activity theory to understand dynamic student participation in small group Science, Technology, Engineering and Mathematics activities. *Journal of Research in Science Teaching*. Retrieved from <https://doi.org/10.1002/tea.21710>
- Dare, E.A. & **Ring-Whalen, E.A.** (2021). Eliciting and refining conceptions of STEM education: A series of activities for professional development. *Innovations in Science Teacher Education, 6*(2), Retrieved from <https://innovations.theaste.org/eliciting-and-refining-conceptions-of-stem-education-a-series-of-activities-for-professional-development/>
- Ellis, J.A., Wieselmann, J.R., Sivarej, R., Roehrig, G.H., Dare, E.A., **Ring-Whalen, E.A.** (2020). Toward a productive definition of technology in science and STEM education. *Contemporary Issues in Technology and Teacher Education, 20*(3). Retrieved from <https://citejournal.org/volume-20/issue-3-20/science/toward-a-productive-definition-of-technology-in-science-and-stem-education/>

- Weiselmann, J.R., *Keratithamkul, K., Dare, E.A., **Ring-Whalen, E.A.**, & Roehrig, G.H. (2020). Discourse analysis in integrated STEM activities: Methods for exploring power dynamics in small group interactions. *Research in Science Education*, 51(1), 113-133. DOI: 10.1007/s11165-02009950-w
- Wieselmann, J.R., Dare, E.A., **Ring-Whalen, E.A.**, & Roehrig, G.H. (2020). I just do what the boys tell me: Exploring small group student interactions in an integrated STEM unit. *Journal of Research in Science Teaching*, 57(1), 112-144. DOI: 10.1002/tea.21587
- Dare, E.A., **Ring-Whalen, E.A.**, Roehrig, G.H. (2019). Creating a continuum of STEM models: Exploring how K-12 science teachers conceptualize STEM education. *International Journal of Science Education*, 41(12), 1701-1720. DOI: 10.1080/09500693.2019.1638531
- Roehrig, G.H., **Ring-Whalen, E.A.**, Dare, E.A., Ellis, J.A., & Wieselmann, J.R. (2019). WIP: The Development of a K-12 Integrated STEM Observation Protocol. In *Proceedings of the 2019 ASEE Annual Conference and Exposition*. Tampa, FL: ASEE. <https://doi.org/10.18260/1-2--33573>
- Wieselmann, J.R., Dare, E.A., Roehrig, G.H., **Ring-Whalen, E.A.** (2019). *Participation in small group engineering design activities at the middle school level: An investigation of gender differences*. American Society for Engineering Education Annual Conference, Tampa, 2019.
- Ring-Whalen, E.A.**, Dare, E.A., Roehrig, G.H., Titu, P., & Crotty, E.A. (2018). From conception to curricula: The role of science, technology, engineering and mathematics in integrated STEM units. *International Journal of Education in Mathematics, Science, and Technology*, 6(4), 343-362.
- Titu, P., **Ring-Whalen, E.A.**, Brown, J.C., Roehrig, G.H. (2018). Exploring changes in science teachers' attitudes toward culturally diverse students during an equity-focused course. *Journal of Science Teacher Education*. DOI: 10.1080/1046560X.2018.1461006
- Brown, J.C., **Ring-Whalen, E.A.**, Roehrig, G.H., & Ellis, J.A. (2018). Advancing culturally responsive science education in secondary classrooms through an induction course. *International Journal of Designs for Learning*, 9(1), 14-33.
- Guzey, S.S., **Ring-Whalen, E.A.** (2018). Negotiating science and engineering: An exploratory case study of a reform-minded science teacher. *International Journal of Science Education*. 40(7), 723-741.
- Ring, E.A.** (2017). *Teacher conceptions of integrated STEM education and how they are reflected in integrated STEM curriculum writing and classroom implementation*. (Doctoral dissertation). Retrieved from ProQuest. (10283633)
- Ring, E.A.**, Dare, E.A., Crotty, E.A., & Roehrig, G.H. (2017). Evolution of teacher conceptions of STEM education throughout an intensive professional development experience. *Journal of Science Teacher Education*, 28(5), 444-467.
- Guzey, S.S., **Ring-Whalen, E.A.**, Harwell, M., & Peralta, Y. (2017). Life STEM: A case study of life science learning through engineering design. *International Journal of Science and Mathematics Education*, 1-20. <https://doi.org/10.1007/s10763-017-9860-0>.
- Crotty, E.A., Guzey, S.S., Roehrig, G.H., **Ring-Whalen, E.A.**, Glancy, A.W., & Moore, T.J. (2017). Approaches to integrating engineering in STEM units and student achievement gains. *Journal of Pre-College Engineering Education Research*, 7(2), <https://doi.org/10.7771/2157-9288.1148>

PROFESSIONAL PRESENTATIONS

- Roehrig, G.H., Dare, E.A., Ellis, J.A., **Ring-Whalen, E.A.**, Rouleau, M.D. (2023, April). *Exploring the nature of integrated STEM through a STEM curriculum unit*. NARST Annual International Conference. Chicago, IL. [part of related paper set]
- Dare, E.A., Ellis, J.A., **Ring-Whalen, E.A.**, Roehrig, G.H., Rouleau, M.D., *Hiwatig, B. M., *Faruqi, F., *Irwin, C. (2023, April). *Observing integrated STEM education in K-12 science and engineering classrooms with new tools and resources*. NARST Annual International Conference. Chicago, IL. [pre-conference workshop]
- Dare, E.A., Ellis, J.A., Roehrig, G.H., **Ring-Whalen, E.A.**, *Keratithamkul, K., *Hiwatig, B.M., *Faruqi, F., *Robinson, L, Rouleau, M.D., & Irwin, C. (2023, January). *Tools and resources for observing*

- integrated STEM education in K-12 science and engineering classrooms*. Association for Science Teacher Education (ASTE). Salt Lake City, UT.
- Roehrig, G.H., Dare, E.A., Ellis, J.A., & **Ring-Whalen, E.A.** (2022, September). *Development of a framework and observation protocol for integrated STEM*. Japan Society for Science Education (JSSE). Sapporo, Japan. [part of related paper set]
- Dare, E.A., Roehrig, G.H., Ellis, J.A., Rouleau, M.D., & **Ring-Whalen, E.A.** (2022, September). *Understanding current practices of integrated STEM education in K-12 science classrooms*. Japan Society for Science Education (JSSE). Sapporo, Japan. [part of related paper set]
- Roehrig, G.H., Dare, E.A., Ellis, J.A., & **Ring-Whalen, E.A.** (2022, June). *Understanding the nature of integrated STEM in K-12 classrooms*. Australasian Science Education Research Association. Perth, Australia.
- Dare, E.A., Ellis, J.A., Roehrig, G.H., **Ring-Whalen, E.A.**, & Rouleau, M.D. (2022, June). *Current practices in K-12 integrated STEM education: A comparison across science content areas and grad levels (Fundamental)*. ASEE 2022 Annual Conference & Exposition. Minneapolis, MN.
- Dare, E.A., Ellis, J.A., Roehrig, G.H., **Ring-Whalen, E.A.**, *Hiwatig, B.M., *Faruqi, F., *Keratithamkul, K., *Forde, E., & *Robinson, L. (2022, March). *Explorations of K-12 integrated STEM teaching (Related Paper Set)*. 2022 NARST Annual International Conference. Vancouver, BC.
- *Hiwatig, B. M., Ellis, J. A., Dare, E.A., **Ring-Whalen, E.A.**, *Forde, E., & Roehrig, G.H. (2022, January). *Relationship between Context Integration and Content Integration in the Implementation of Integrated STEM*. Association for Science Teacher Education (ASTE). Greenville, SC.
- Dare, E.A., Ellis, J.A., **Ring-Whalen, E.A.**, & Roehrig, G.H. (2022, January). *Measuring integrated STEM education in practice: Comparing science content and grade level observations*. Association for Science Teacher Education (ASTE). Greenville, SC.
- Dare, E.A., *Hiwatig, B., *Keratithamkul, K., Ellis, J.A., Roehrig, G.H., **Ring-Whalen, E.A.**, Rouleau, M.D., *Faruqi, F., *Rice, C., Titu, P., Li, F., Wieselmann, J.R., & Crotty, E.A. (2021, July). *Improving integrated STEM education: The design and development of a K-12 STEM observation protocol (STEM-OP) (RTP)*. ASEE 2021 Annual Conference & Exposition. Virtual Conference.
- Dare, E.A., Ellis, J.A., **Ring-Whalen, E.A.**, & Roehrig, G.H. (2021, July). *Beyond observing: The multiple uses of a new integrated STEM education observation protocol (workshop)*. 6th International STEM in Education Conference. Vancouver, Canada.
- Wieselmann, J.R., Dare, E.A., Keratithamkul, K., **Ring-Whalen, E.A.**, Roehrig, G.H. (2021, April). *Tools for learning or tools for power? Middle school students' use of engineering tools*. National Association for Research in Science Teaching (NARST) Annual International Conference, Salt Lake City, UT (Virtual Conference).
- Ellis, J.A., Dare, E.A., Rouleau, M.D., **Ring-Whalen, E.A.**, Roehrig, G.H. (2021, April). *Empirical validation of a STEM observation instrument using exploratory factor analysis*. National Association for Research in Science Teaching (NARST) Annual International Conference, Salt Lake City, UT (Virtual Conference).
- Dare, E.A., Ellis, J.A., **Ring-Whalen, E.A.**, Roehrig, G. H. (2021, April). *Using an observation protocol designed for integrated STEM instruction in K-12 science and engineering classrooms*. National Association for Research in Science Teaching (NARST) Annual International Conference, Salt Lake City, UT (Virtual Conference).
- Wieselmann, J.R., Dare, E.A., Keratithamkul, K., **Ring-Whalen, E.A.** Roehrig, G.H. (2021, April). *Discourse analysis in integrated STEM activities: Methods for examining power and positioning in small group interactions*. American Education Research Association (AERA) Annual Conference, Orlando, FL (Virtual Conference).
- Wieselmann, J.R., Dare, E.A., Keratithamkul, K., **Ring-Whalen, E.A.** Roehrig, G.H. (2021, April). *Combining discourse analysis approaches to critically examine power and positioning in small group STEM activities*. American Education Research Association (AERA) Annual Conference, Orlando, FL (Virtual Conference).

- Keratithamkul, K., Roehrig, G.H., Wieselmann, J.R., Dare, E.A., **Ring-Whalen, E.A.** (2021, January). *Examining the effects of race and gender on small group interactions through critical discourse.* American Education Research Association (AERA) Annual Conference, Orlando, FL (Virtual Conference).
- Ellis, J.A., Dare, E.A., Rouleau, M.D., **Ring-Whalen, E.A.**, Roehrig, G.H. (2021, January). *Preliminary exploratory factor analysis of a STEM observation instrument.* Association of Science Teacher Educators (ASTE) Annual International Conference, Salt Lake City, UT (Virtual Conference).
- Wieselmann, J.R., **Ring-Whalen, E.A.**, Dare, E.A., Roehrig, G.H. (2020, January). *Gender, power, and positioning: Examining discourse in middle school students' small group engineering interactions.* National Association for Research in Science Teaching (NARST) Annual International Conference, Portland, OR.
- Dare, E.A., Ellis, J.A., **Ring-Whalen, E.A.**, Roehrig, G. H. (2020, January). *An observation protocol for integrated STEM instruction in K-12 science and engineering classes.* National Association for Research in Science Teaching (NARST) Annual International Conference, Portland, OR.
- Dare, E.A., Ellis, J.A., **Ring-Whalen, E.A.**, Roehrig, G.H. (2020, January). *Preparing to observe integrated STEM education in K-12 classrooms.* 2020 Association for Science Teacher Education (ASTE) International Conference, San Antonio, TX.
- Wieselmann, J.R., **Ring-Whalen, E.A.**, Dare, E.A., Roehrig, G.H. (2020, January). *Supporting students in small group engineering activities: An exploration of teacher moves.* 2020 Association for Science Teacher Education (ASTE) International Conference, San Antonio, TX.
- Ellis, J.A., Wieselmann, J.R., Roehrig, G.H., Dare, E.A., **Ring-Whalen, E.A.** (2020, January). *Perspectives on the role of technology in science education.* 2020 Association for Science Teacher Education (ASTE) International Conference, San Antonio, TX.
- Wieselmann, J.R., Dare, E.A., Roehrig, G.H., **Ring-Whalen, E.A.** (2019, November). *The teacher's role in integrated STEM: Supporting students in small groups.* 2019 International STEM in Education Symposium, Chongqing, China.
- Ring-Whalen, E.A.**, Wieselmann, J.R., & Roehrig, G.H. (2019, August). *Students and STEM: Elementary students' conceptions of STEM education attending a STEM school vs. a non-STEM school.* 13th Conference of the European Science Education Research Association, Bologna, Italy.
- Roehrig, G.H., **Ring-Whalen, E.A.**, Dare, E.A., & Wieselmann, J.R. (2019, August). *Evaluating the quality of K-12 integrated STEM curriculum.* 13th Conference of the European Science Education Research Association, Bologna, Italy.
- Wieselmann, J.R., Dare, E.A., **Ring-Whalen, E.A.**, & Roehrig, G.H. (2019, August). *Gender and small group STEM activities: A comparison of science and engineering participation.* 13th Conference of the European Science Education Research Association, Bologna, Italy.
- Dare, E.A., Ellis, J.A., **Ring-Whalen, E.A.**, & Roehrig, G.H. (2019, August). *Assessing and improving integrated STEM instruction with the STEM observation protocol (STEM-OP).* 13th Conference of the European Science Education Research Association, Bologna, Italy.
- Ellis, J.A., Roehrig, G.H., Wieselmann, J.R., Dare, E.A., & **Ring-Whalen, E.A.** (2019, August). *The role of technology in STEM education.* 13th Conference of the European Science Education Research Association, Bologna, Italy.
- Wieselmann, J.R., Dare, E.A., **Ring-Whalen, E.A.**, & Roehrig, G.H. (2019, July). *Gender equity and small group participation in a laser security system STEM unit.* 8th Annual STEM Forum & Expo, San Francisco, CA.
- Roehrig, G.H., **Ring-Whalen, E.A.**, Dare, E.A., Ellis, J.A. (2019, June). *The development of a K-12 STEM observation protocol.* American Society for Engineering Education (ASEE) Annual Conference and Exposition, Tampa, FL.
- Wieselmann, J.R., Dare, E.A., **Ring-Whalen, E.A.**, & Roehrig, G.H. (2019, June). *Participation in small group engineering design activities at the elementary and middle school levels: An investigation of gender differences.* American Society for Engineering Education (ASEE) Annual Conference and Exposition, Tampa, FL.

- Roehrig, G.H., & **Ring-Whalen, E.A.** (2019, March). *A macro- and micro-analysis of teacher-developed integrated STEM curriculum*. National Association for Research in Science Teaching (NARST) Annual International Conference, Baltimore, MD.
- Crotty, E.A., **Ring-Whalen, E.A.**, Roehrig, G.H., & Livstrom, I.C. (2019, March). *Exploring the potential of teacher leadership to drive STEM programming in public schools*. National Association for Research in Science Teaching (NARST) Annual International Conference, Baltimore, MD.
- Wieselmann, J.R., Dare, E.A., **Ring-Whalen, E.A.**, & Roehrig, G.H. (2019, March). *Exploring girls' participation in small group work during an integrated STEM curriculum unit*. National Association for Research in Science Teaching (NARST) Annual International Conference, Baltimore, MD.
- Wieselmann, J.R., Dare, E.A., **Ring-Whalen, E.A.**, Roehrig, G.H. (2019, January). *Navigating integrated STEM in small group activities: A gender-focused case study*. Association for Science Teacher Education (ASTE) International Conference, Savannah, GA.
- Crotty, E.A., Roehrig, G.H., **Ring-Whalen, E.A.**, Livstrom, I. (2019, January). *Teacher leadership to drive STEM programming in emerging STEM schools*. Association for Science Teacher Education (ASTE) International Conference, Savannah, GA.
- Ring-Whalen, E.A.**, Dare, E.A., Roehrig, G.H., Wieselmann, J.R. (2018, November). *Bringing STEM conceptions to life through integrated STEM curriculum implementation: A multiple case study in elementary science classrooms*. 5th International STEM in Education Conference, Brisbane, AU.
- Roehrig, G.H., **Ring-Whalen, E.A.**, Crotty, E.A., Livstrom, I. (2018, November). *An exploration of the process of becoming a STEM middle school*. 5th International STEM in Education Conference, Brisbane, AU.
- Wieselmann, J.R., Dare, E.A., **Ring-Whalen, E.A.**, Roehrig, G.H. (2018, November). *Participation in small group integrated STEM activities: A gender-focused case study*. 5th International STEM in Education Conference, Brisbane, AU.
- Ring-Whalen, E.A.**, Dare, E.A., Roehrig, G.H., Titu, P., & Crotty, E.A. (2018, April). *STEM conceptions and curricula: How teachers' conceptions of integrated STEM are reflected in curriculum writing*. American Educational Research Association (AERA) Annual Conference, New York, NY.
- Dare, E.A., **Ring-Whalen, E.A.** & Roehrig, G.H. (2018, April). *Understanding science teachers' multiple realities of STEM education through photo elicitation and phenomenography*. American Educational Research Association (AERA) Annual Conference, New York, NY.
- Ellis, J., **Ring-Whalen, E.A.**, & Roehrig, G.H. (2018, April). *The evolution of beginning science teachers' reform-based beliefs and practices in an induction program*. American Educational Research Association (AERA) Annual Conference, New York, NY.
- Ring-Whalen, E.A.**, Dare, E.A., Roehrig, G.H., & Wieselmann, J.R. (2018, March). *Teachers' practices and enactments of their conceptual models of STEM during classroom implementation of an integrated STEM curriculum*. National Association for Research in Science Teaching (NARST) Annual International Conference, Atlanta, GA.
- Ring-Whalen, E.A.**, Dare, E.A., & Roehrig, G.H. (2018, March). *Understanding conceptual effects: How teacher's conceptual models of integrated STEM education influence curriculum writing*. National Association for Research in Science Teaching (NARST) Annual International Conference, Atlanta, GA.
- Crotty, E.A., **Ring-Whalen, E.A.**, Livstrom, I., & Roehrig, G.H. (2018, March). *Teacher leadership STEM teams: Examining critical components for STEM schools*. National Association for Research in Science Teaching (NARST) Annual International Conference, Atlanta, GA.
- Roehrig, G.A., Wieselmann, J.R., **Ring-Whalen, E.A.**, & Dare, E.A. (2018, January). *The anatomy of an integrated STEM curriculum*. Korean Association for Science Education (KASE) Annual International Conference, Chungbuk, Korea.

- Ring-Whalen, E.A.**, Dare, E.A., Roehrig, G.H., & Wieselmann, J.R. (2018, January). *Differences in teachers' practices and ways in which their conceptual models of STEM are enacted during implementation of an integrated STEM curriculum unit*. Association for Science Teacher Education (ASTE) Annual International Conference, Baltimore, MD.
- Dare, E.A., **Ring-Whalen, E.A.**, & Roehrig, G.H. (2018, January). *Not as easy as it looks: Ranking different STEM models in a continuum*. Association for Science Teacher Education (ASTE) Annual International Conference, Baltimore, MD.
- Crotty, E.A., **Ring-Whalen, E.A.**, Livstrom, I.C., & Roehrig, G.H. (2018, January). *Building STEM schools from the ground up: How teacher leadership teams shape STEM integration in Schools*. Association for Science Teacher Education (ASTE) Annual International Conference, Baltimore, MD.
- Dare, E.A., **Ring, E.A.**, & Roehrig, G.H. (2017, August). *Multiple conceptions of integrated STEM education: Which one is best?* European Science Education Research Association Conference (ESERA) Annual International Conference, Dublin, Ireland.
- Ellis, J., **Ring, E.A.**, & Roehrig, G.H. (2017, August). *Relating beginning science teachers' reform-based beliefs and practices in an induction program*. European Science Education Research Association (ESERA) Annual International Conference, Dublin, Ireland.
- Ring, E.A.**, Dare, E.A., Roehrig, G.H., Titu, P., & Crotty, E.A. (2017, April). *Understanding conceptual effects: How teachers' conceptual models of integrated STEM education influence curriculum writing*. National Association for Research in Science Teaching (NARST) Annual International Conference, San Antonio, TX.
- Dare, E.A., **Ring, E.A.**, & Roehrig, G.H. (2017, April). *Creating STEM continua: A phenomenographic approach to understanding perceptions of STEM integration models*. National Association for Research in Science Teaching (NARST) Annual International Conference, San Antonio, TX.
- Ellis, J., **Ring, E.A.**, Brown, J.C., & Roehrig, G.H. (2017, April). *The relationship between reform-based beliefs and practices for beginning science teachers in an induction program*. National Association for Research in Science Teaching (NARST) Annual International Conference, San Antonio, TX.
- Titu, P., **Ring, E.A.**, Brown, J.C., & Roehrig, G.H. (2017, April). *Exploring changes in science teachers' attitudes toward culturally diverse students during an induction course*. National Association for Research in Science Teaching (NARST) Annual International Conference, San Antonio, TX.
- Guzey, S., & **Ring, E.A.** (2017, April). *An examination of three approaches to engineering integration*. National Association for Research in Science Teaching (NARST) Annual International Conference, San Antonio, TX.
- Ring, E.A.**, Dare, E.A., Roehrig, G.H., Titu, P., & Crotty, E.A. (2017, January). *Putting conceptions into practice: Understanding how science teachers prioritize aspects of STEM integration in curriculum writing*. Association for Science Teacher Education (ASTE) Annual International Conference, Des Moines, IA.
- Brown, J.C., **Ring, E.A.**, Roehrig, G.H., & Ellis, J. (2017, January). *Advancing culturally responsive science education in secondary classrooms through an induction course*. Association for Science Teacher Education (ASTE) Annual International Conference, Des Moines, IA.
- Ellis, J., **Ring, E.A.**, Brown, J.C., & Roehrig, G.H. (2017, January). *Induction and its impact on beginning science teachers' reform-based beliefs and practices*. Association for Science Teacher Education (ASTE) Annual International Conference, Des Moines, IA.
- Titu, P., **Ring, E.A.**, Brown, J.C., & Roehrig, G.H. (2017, January). *A work in progress: The evolution of science teacher attitudes toward teaching culturally diverse students throughout a 4-week-long summer course*. Association for Science Teacher Education (ASTE) Annual International Conference, Des Moines, IA.
- Ring, E.A.**, Dare, E.A., Roehrig, G.H., Titu, P., & Crotty, E.A. (2016, October). *Science teachers' conceptions of integrated STEM education and how these conceptions influence curriculum development*. North Central Association for Science Teacher Education (NC-ASTE) Annual Conference, Des Moines, IA.

- Dare, E.A., **Ring, E.A.**, & Roehrig, G.H. (2016, October). *Addressing and understanding models of STEM integration*. North Central Association for Science Teacher Education (NC-ASTE) Annual Conference, Des Moines, IA.
- Titu, P., **Ring, E.A.**, Brown, J.C., & Roehrig, G.H. (2016, October). *Exploring attitudinal changes: The evolution of science teachers' attitudes toward culturally diverse students during an induction course*. North Central Association for Science Teacher Education (NC-ASTE) Annual Conference, Des Moines, IA.
- Ring, E.A.**, Dare, E.A., Crotty, E.A., & Roehrig, G.H. (2016, April). *Shifting conceptions: Identifying and understanding teachers' conceptual models of integrated STEM education*. National Association for Research in Science Teaching (NARST) Annual International Conference. Baltimore, MD.
- Crotty, E.A., Brown, J.C., Guzey, S.R., Glancy, A., **Ring, E.A.**, & Moore, T. (2016, April). *Conceptualizing STEM integration units that correlate to student achievement gains with engineering standards*. National Association for Research in Science Teaching (NARST) Annual International Conference. Baltimore, MD.
- Ring, E.A.**, Dare, E.A., Crotty, E.A., & Roehrig, G.H. (2016, January). *A work in progress: The evolution of teacher conceptions of STEM education throughout an intensive 3-week-long professional development*. Association of Science Teacher Educators (ASTE) Annual International Conference. Reno, NV.
- Crotty, E.A., Brown, J.C., Guzey, S.R., Glancy, A., **Ring, E.A.**, & Moore, T. (2016, January). *Conceptualizing STEM integration units that correlate to student achievement gains with engineering standards*. Association of Science Teacher Educators (ASTE) Annual International Conference. Reno, NV.

INVITED PRESENTATIONS

- Wieselmann, J.R., Dare, E.A., **Ring-Whalen, E.A.**, & Roehrig, G.H. (2021). *Research Worth Reading Session: I just do what the boys tell me: Exploring small group student interactions in an integrated STEM unit*. National Association for Research in Science Teaching (NARST) Annual International Conference, Salt Lake City, UT (Virtual Conference).
- Roehrig, G. H., Dare, E.A., **Ring-Whalen, E.A.**, & Wieselmann, J.R. (2019, December). *A Macro- and micro-analysis of teacher-developed integrated STEM curriculum*. NSTA Seattle Area Conference, Seattle, WA.
- Roehrig, G.H., Dare, E.A., **Ring-Whalen, E.A.**, Ellis, J.A. (2019, December). *Using a STEM observation protocol to improve your instruction*. National Science Teachers' Association Regional Conference, Seattle, WA.
- Ring, E.A.**, Dare, E.A., & Roehrig, G.H. (2018, March). *Understanding conceptual effects: How teachers' conceptual models of integrated STEM education influence curriculum writing*. National Science Teachers Association (NSTA) Annual Conference, Atlanta, GA.
- Ring, E.A.**, Dare, E.A., Crotty, E.A., & Roehrig, G.H. (2017, March). *Shifting conceptions: Identifying and understanding teachers' conceptual models of integrated STEM education*. National Science Teachers' Association (NSTA) Annual Conference. Los Angeles, CA.
- Roehrig, G.H., Dare, E.A., **Ring, E.A.**, & Titu, P. (2016, December). *Forging faculty-student research collaborations and crafting a three-paper dissertation*. University of Minnesota Curriculum and Instruction Research Day. Minneapolis, MN.
- Ring, E.A.**, Dare, E.A., Crotty, E.A., & Roehrig, G.H. (2016, April). *A work in progress: The evolution of teacher conceptions of STEM education throughout an intensive 3-week-long professional development*. University of Minnesota Curriculum and Instruction Research Day. Minneapolis, MN.