

Kristin Michod Gagnier, Ph.D.

Senior Research Scientist

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Dr. Kristin Gagnier's scholarship and professional work center on advancing the science of education, with a strong emphasis on Science, Technology, Engineering, and Mathematics (STEM). She collaborates with scientists, educational institutions, and community organizations to bridge research, practice, and policy, aiming to improve educational outcomes for students and teachers across diverse, formal, and informal learning environments. Kristin brings deep expertise in research-practice partnerships, working closely with educational stakeholders to identify learning needs, design practical and scalable interventions, and evaluate their effectiveness in enhancing student and teacher success. Her contributions to the field were recently recognized with the prestigious *Presidential Early Career Award for Scientists and Engineers (PECASE)* from the U.S. Department of Education.

Experience

Senior Research Scientist, AnLar (Arlington, VA)

2021–Present

Plans and executes large-scale educational program development and evaluation research projects.

- Directs the development and evaluation of the [SPACE-IT program](#) to support teaching and learning in elementary science. Funded by the Institute of Education Sciences, SPACE-IT is a novel professional development program that utilizes workshops and coaching to facilitate 5th-grade teachers' effective science instruction and students' spatial thinking skills, interest, and science achievement.
- Directs an Institute of Education Sciences-[funded project to develop and pilot test](#) an evidence-informed third-grade science curriculum. Using an iterative development process involving focus groups with teachers, measures of implementation fidelity, and curriculum usability and feasibility, this project will refine and examine the effectiveness of the curriculum on student interest and achievement in science.
- Directs the [Experiencing STEM FirstHand Program](#), which is funded by the Department of [Education's Education Innovation and Research \(EIR\)](#) program. FirstHand is a novel approach to bolstering scientific identity, interest, and knowledge in middle school underrepresented students.
- Engages with educational stakeholders to understand their STEM education challenges. Collaborates with them to develop innovative solutions and evaluate their effectiveness.

- Leads interdisciplinary teams to develop and improve programs, conducts STEM education research, and provides technical assistance to educational clients.
- Works collaboratively with states, districts, postsecondary institutions, and community organizations to evaluate novel approaches for improving teaching and learning in schools.
- Provides thought leadership to guide AnLar's dissemination of research in professional, practitioner, and research settings.
- Leads and supports business development and proposals for new projects for the US Department of Education, other government agencies, and foundations.
- Provides quality control on products and deliverables and project management of teams, including supervising and mentoring junior researchers and staff.

Director of Dissemination, Translation, and Education, Science of Learning Institute, Johns Hopkins University (Baltimore, MD)

2017–2021

Oversaw the Institute's mission of connecting science to practice through the development of strategic educational partnerships.

- Cultivated and maintained strategic partnerships with schools, museums, and government and community organizations to advance research on learning and translate science of learning research into evidence-informed programs and resources.
- Developed and executed innovative educational programming and presentations to meet stakeholder needs and evaluate their impact on learning goals.
- Conducted translational research and program evaluation projects with community partners.
- Produced peer-reviewed papers, technical reports, and other scholarly dissemination products.
- Consulted with education and community leaders on research and its relevance to their practice and needs.

Outreach and Evaluation Specialist, Science of Learning Institute, Johns Hopkins University (Baltimore, MD)

2015–2017

Advance the Institute's dissemination and translation portfolio to academic and community audiences.

- Secured over 1.7 million dollars in federal grants and other external funding to support translational science research.
- Disseminated research into targeted messaging to help stakeholders understand the relevance of research to improving learning.
- Translated research into evidence-informed practices designed to meet the needs of educators in formal and non-formal learning settings.



- Conducted evaluation research to assess the impact of applications on learning and behavior.
- Executed events for scientific and non-scientific audiences to facilitate interdisciplinary collaborations among researchers and connections between research and practice.

Postdoctoral Research Fellow, Spatial Intelligence and Learning Center, Temple University (Philadelphia, PA) 2011–2015

- Planned, designed, and executed science of learning research.
- Authored professional papers, reports, and presentations to communicate findings to scientific audiences.
- Partnered with community organizations to develop professional development workshops and training seminars for educators and parents.
- Provided support such as grant writing, conference and symposia planning, and mentorship.

Education

- University of Delaware (Newark, DE)
Ph.D., Cognitive Psychology
- University of Arizona (Tucson, AZ)
B.S., Psychology, and Biology

Funding

- Co-Principal Investigator, *Experiencing STEM FirstHand: The Impact of a Novel Approach to Bolstering Scientific Identity, Interest, and Knowledge in Low-Income Middle School Students of Color*. Funder: Office of Elementary and Secondary Education, Education, Innovation, and Research (EIR), 2022-2026. Total Award: \$3,999,782.
- Principal Investigator, *Making Space in Science Instruction: Developing the SPACE-IT Program to Foster Students' Spatial Thinking Skills and Science Achievement*. Funder: Institute of Education Sciences, 2021-2025. Total Award: \$1,998,794.
- Project Director, *A Formative Evaluation of an Online Professional Development Platform to Promote Teachers' Use of Research-informed Practices*. Funder: Chan-Zuckerberg Foundation. Total Award: \$45,694.50.
- Co-Principal Investigator, *Improving Early Child Development Through the Integration of Safe Play and Song-based Learning in Villa El Salvador, Peru: A Program Development Project*. Funder: Johns Hopkins University Discovery Award, 2018 – 2019. Total award: \$97,295.



- Co-Investigator, *Child Development Through Safe Play and Song-based Learning: Exploring Early Learning Contexts in Villa El Salvador, Peru*. Funder: 2018-2019. The Alliance for a Healthier World, 2018-2019. Total Award: \$23,825.
- Principal Investigator, *Developing a Spatially-enhanced Elementary Curriculum and Teacher Training Series to Improve Science Achievement*. Funder: Institute of Education Sciences, 2017-2021. Total Award: \$1,398,481.
- Co-Project Director, *Formative Program Evaluation of the Science of Teaching & School Leadership Academy*. Funder: E.E. Ford Foundation (PI: The Center for Transformative Teaching and Learning), 2017-2020. Total Award: \$114,234.
- Project Director, *The Science of Learning: Exploring Goals, Methods, and Educational Practice (Teacher Professional Development Workshop)*. Funder: E.E. Ford Foundation (PI: The Center for Transformative Teaching and Learning), 2017-2019. Total Award: \$38,316.
- Co-Principal Investigator. *Playing with Space: An Early Childhood Teacher Training Workshop to Enhance Spatial Thinking for Future STEM Success*. (Co-PI: Port Discovery). Funder: Annie E. Casey Foundation, 2018- 2019. Total Award: \$10,000.
- Project Director, *Developing Science-informed Content for the “All the Way to K” Early Language and Literacy program*. Funder: W.K. Kellogg Foundation (PI: Children’s Museum of Manhattan), 2017-2018. Total Award: \$25,000.
- Consultant, *Bilingualism*. Funder: Nanyang Technological University (PI: Barbara Landau). 2016 – 2018. Total Award: \$333,843.
- Principal Investigator, *Inter-Science of Learning Centers Conference*. Funder: National Science Foundation Grant (Co-PI: Nora Newcombe), 2013-2015. Total Award: \$114,962.
- Core Researcher, *Developing and Testing Materials to Improve Spatial Skills in Upper Division Geoscience Courses*. Funder: National Science Foundation Grant, Transforming Undergraduate Education Program. (PI: Carol Ormand), 2011-2014. Total award: \$174,800.
- University of Delaware Dissertation Fellowship, 2009-2010.
- University of Delaware, Department of Psychology Research Fellowship, 2005-2006.



Publications

Gagnier, K. M. Steven J. Holochwest, S., J, Mendonca, Ligia., & Fisher, K. R. (in press). Spatially-Enhanced Science Instruction in Elementary School: Impacts on Teachers' and Students' Spatial Skills. Manuscript in press at a special issue of Learning and Instruction focused on Educational relevance and implications of spatial development in early childhood.

Kurman, M. & Gagnier, K. M. (2024). [A Model for Immersive STEM Education: Lessons from 10 Years of Cross-Sector Collaborations in Philadelphia](#). Innovations in Cross-Sector Collaborations: An Approach to Increase Ecosystem and Place-Based Impact.

Gagnier, K. M., Holochwest, S. J., Ceren, M. & Fisher, K. R. (2024). Filling a gap: initial evidence for reliable and valid measures of students' self-concept, self-efficacy, and interest in science with elementary students traditionally underrepresented in STEM. *Frontiers in Education*. DOI: [10.3389/feduc.2023.1242876](https://doi.org/10.3389/feduc.2023.1242876)

Michod, R.E., Davison, D. R., Sanders, H., Hoskinson, J. S. and Gagnier, K.M. (2022). Translating research on evolutionary transitions into the teaching of biological complexity. *Evolution*, 76(6), 1124-1138.

Gagnier, K. M., Holochwest, S. J., & Fisher, K. R. (2021). Spatial Thinking in Science, Technology, Engineering, and Mathematics: Elementary Teachers' Beliefs, Perceptions, and Self-Efficacy. *Journal of Research in Science Teaching*. 1–32. <https://doi.org/10.1002/tea.21722>

Rothstein, J. D., Buckland, A. J., Gagnier, K., Ochoa, M., Allen-Valley, A., Jivapong, B., ... & Fisher, K. R. (2021). Assessing the play and learning environments of children under two years in peri-urban Lima, Peru: A formative research study. *BMC Public Health*.

Gagnier, K. M., & Fisher, K. R. (2020). Unpacking the Black Box of Translation: A framework for infusing spatial thinking into curricula. *Cognitive Research: Principles and Implications*, 5(1), 1-19.

Intraub, H., & Gagnier, K. M. (2018). Expanding Space: Does Imagination Affect Boundary Extension for Visual Scenes? In T. L. Hubbard (Ed.). *Spatial Biases in Perception and Cognition*. Cambridge, UK: Cambridge University Press.



Davatzes, A., Gagnier, K.M., Resnick, I., & Shipley, T. F. A Cycle of Prediction, Comparison, and Feedback Supports Spatial Learning in Geoscience. (2018). *EoS, Earth, Space, and Science News*.

Holochwost, S. J., Wolf, D. P., Fisher, K. R., O'Grady, K., & Gagnier, K. M. (2018). The Arts and Socioemotional Development: Evaluating a New Mandate for Arts Education. In *Arts Evaluation and Assessment* (pp. 147-180). Palgrave Macmillan, Cham.

Gagnier, K. M., Atit, K., Ormand, C. J., & Shipley, T. F. (2017). Comprehending diagrams: Sketching to support spatial reasoning. *Topics in Cognitive Science*, 1-19. DOI: 10.1111/tops.12233

Ormand, C. J., Shipley, T. F., Tikoff, B., Dutrow, B., Goodwin, L., Hickson, T. A., Atit, K., Gagnier, K. M., & Resnick, I. (2017). The spatial thinking workbook: A research-validated spatial skills curriculum for geology majors. *Journal of Geoscience Education: Synthesizing Results and Defining Future Directions of Geoscience Education Research*, 65(4), 423-434.

Gagnier, K.M., & Shipley, T. F. (2016). Visual completion from 2D cross-sections: Implications for visual theory and STEM education and practice. *Cognitive Research: Principles and Implications*, 1(1), 1-18. DOI: 10.1186/s41235-016-0010-y

Gagnier, K.M., Atit, K. & Shipley, T.F. (2016). Understanding and Improving Reasoning of Spatial Representations: Implications for Education. In David J. Cowen (Ed.), *STEM and GIS in Higher Education*. ESRI Press.

Gagnier, K.M., Shipley, T. F., Tikoff, B., Ormand, C.J., Atit, K., Resnick, I., & Garnier, B. (2016). Training spatial skills in geosciences: A review of tools and tests. AAPG Memoir: 3-D Structural Interpretation: Earth, Mind, and Machine, 111, 7-23. DOI: 10.1306/13561983M1113668

Intraub, H., Morelli, F., & Gagnier, K. M. (2015). Visual, haptic, and bimodal scene perception: Evidence for a unitary representation. *Cognition*, 138, 132-147.

Atit, K. Gagnier, K.M., & Shipley, T.F. (2015). Student gestures aid penetrative thinking. *Journal of Geoscience Education*, 63(1), 66-72. DOI: <http://dx.doi.org/10.5408/14-008.1>

Gagnier, K., M., Dickinson, C. A., & Intraub, H. (2013). Fixating picture boundaries does not eliminate boundary extension: Implications for scene representation. *Quarterly Journal of Experimental Psychology*. DOI: 10.1080/17470218.2013.775595



Gagnier, K., & Shipley, T. F. (2013). Completion in the wild: Perception of 3D forms from cross-sections. *Proceedings of the 35th Annual Meeting of the Cognitive Science Society*. Berlin, Germany: Cognitive Science Society.

Gagnier, K., M & Intraub, H. (2012). When less is more: Line drawings lead to greater boundary extension than color photographs. *Visual Cognition*, 20, 815-824. DOI: 10.1080/13506285.2012.703705

Gagnier, K., M., Intraub, H., Oliva, A. & Wolfe, J.M (2011). Why does vantage point affect boundary extension? *Visual Cognition*, 19, 234-257. DOI: 10.1080/13506285.2010.520680

Wolfe, J. M., Horowitz, T. S., Palmer, E. M., Michod, K. O., & VanWert, M. J. (2010). Getting into guided search. In V. Coltheart (Ed.), *Tutorials in Visual Cognition*. (pp. 93-120). Hove, Sussex: Psychology Press.

Michod, K.O., & Intraub H. (2009). Boundary Extension. *Scholarpedia*, 4(2):3324.

Wolfe, J.M., Horowitz, T.S., & Michod, K.O. (2007). Is visual attention required for robust picture memory? *Vision Research*, 47, 955-964. DOI: 10.1016/j.visres.2006.11.025

Michod, K.O., & Intraub H. (2007). Conceptual masking: Is concept the key or does layout play a role? In Castelhamo, M., Franconeri, S., Curby, K., & Shomstein, S. *Object Perception, Attention, and Memory*.

Technical Reports

Liveoak, J., & Gagnier, K.M. (2024). Measuring the Quality of the FirstHand Program Using the STEM PQA: Spring 2024. Formative Report produced by AnLar for FirstHand S411C21005.

Liveoak, J., & Gagnier, K.M. (2024). Measuring the Quality of the FirstHand Program Using the STEM PQA: Fall 2023. Formative Report produced by AnLar for FirstHand S411C21005.

Sealy, M., Liveoak, J., and Gagnier, K. M. (2024). Formative Evaluation Report Cohort 2: Firsthand Students' Perceptions of the Program Spring 2024. Technical Report produced by AnLar for FirstHand S411C210055.

Sealy M., & Gagnier, K. M. (2024). Formative Evaluation Report Cohort 2: Firsthand Students' Perceptions of the Program. Technical Report produced by AnLar for FirstHand S411C210055.



Handley, G., Gagnier, K.M. & Holian, L. (2024). Formative Evaluation Report: FirstHand Fidelity of Implementation Fall 2023 Cohort 2. Technical Report produced by AnLar for FirstHand S411C2100.

Liveoak, J., & Gagnier, K.M. (2023). Interim Report: FirstHand Evaluation Reports from Cohort 1. Technical Report produced by AnLar for FirstHand S411C210055.

Douglas, A. A., Samuel, D., & Gagnier, K.M. (2023). Formative Evaluation Report: Firsthand Students' Perceptions of the Program and Their Science Beliefs. Technical Report produced by AnLar for FirstHand S411C210055.

Gagnier, K.M. & Holian, L. (2023). Formative Evaluation Report: FirstHand Fidelity of Implementation Fall 2022 Cohort 1. Technical Report produced by AnLar for FirstHand S411C2100.

Liveoak, J., Douglas, A., A., & Gagnier, K.M. (2023). Formative Evaluation Report: FirstHand STEM-PQA Results Cohort 1. Technical Report produced by AnLar for FirstHand S411C210055.

Douglas, A. A., & Gagnier, K.M. (2023). Formative Evaluation Report: Firsthand Mentors' Experiences with and Perceptions of the Program. Technical Report produced by AnLar for FirstHand S411C210055.

Gagnier, K. M., Jones-Manson, S., and Liveoak, J. (2023). Connecting Theory to SEL Practice: Five Key Insights from Innovative, Community-Driven SEL Initiatives and Programs. Cross-project summary produced by AnLar and the Office of Elementary and Secondary Education, Education Innovation and Research (EIR) Program.

Douglas, A. A., Samuel, D., & Gagnier, K.M. (2022). Formative Evaluation Report: FirstHand Facilitators' Perceptions of and Experience with the Program. Technical Report produced by AnLar for FirstHand S411C210055.

Adam, T., Gagnier, K. M., and Jones-Manson, S. (2022). Approaches to Build and Maintain High-Quality, Effective Partnerships. Cross-project summary produced by AnLar and the Office of Elementary and Secondary Education; Education, Innovation, and Research Program (EIR).

Adam, T., Gagnier, K. M., Brizzo, A. (2022). Teacher-Directed Professional Learning. Cross-project summary produced by AnLar and the Office of Elementary and Secondary Education; Education, Innovation, and Research Program (EIR).



Gagnier, K. M., Okawa, A., and Jones-Manson, S. (2022). [Designing and Implementing Social Emotional Learning Programs to Promote Equity](#). White paper produced by AnLar and the Office of Elementary and Secondary Education, Education, Innovation, and Research Program (EIR).

Gagnier, K., M. Vodicka, D., and Quidwai, S. (2021). Prioritize Building Relationships with Your Students: What Science Says. Technical Report Produced for the Global Science of Learning Education Network

Gagnier, K., M. Vodicka, D., and Quidwai, S. (2021). Prioritize Building Relationships with Your Students: What Science Says. Technical Report Produced for the Global Science of Learning Education Network
https://tdlc.ucsd.edu/GSLN/Library/Building_Student_Relationships.pdf

Gagnier, K.M., & Newcombe, N.S. (2021). Spatial enhancements to boost learning of science and math. UNESCO IBE - Science of Learning Portal.
<https://solportal.ibe-unesco.org/spatial-enhancements-to-boost-learning-of-science-and-math/>

Gagnier, K. M (2020). The Science of Building Relationships and Implications for Education. Technical Report produced by the Science of Learning Institute for the Global Science of Learning Network.

Gagnier, K. M (2020). Neuroteach Global Content Analysis: Content Review to Inform Future Refinement. Technical Report produced by the Science of Learning Institute for the Center for Transformative Teaching and Learning.

Gagnier, K. M. (2020). Strategies to Support Learning and Retention. Technical Report produced by the Science of Learning Institute for the Temasek Foundation.

Gagnier, K. M., Holochwost, S. J., Unlutabak., Burcu., & Fisher, K. R. (2019). Summative Evaluation of the Science of Teaching and School Leadership Academy Year 3. Technical Report produced by the Science of Learning Institute for the Center for Transformative Teaching and Learning.

Gagnier, K. M., Holochwost, S. J., & Fisher, K. R. (2018). Formative Evaluation of the Science of Teaching and School Leadership Academy Year 2. Technical Report produced by the Science of Learning Institute for the Center for Transformative Teaching and Learning.



Gagnier, K., Fisher, K., & Holochwost, S. (2018). Informing the development of the “All the Way to K” Program: Understanding caregivers’ knowledge, perceptions, and practices in language and literacy development in young children. Technical report for the Children’s Museum of Manhattan. New York, New York.

Landau, B., Fisher, K. R., Gagnier, K. M. & Magsamen, S. (2018). Unpacking the “Black Box.” The Science of Learning Institute 5th Anniversary. Technical Report produced by the Science of Learning Institute.

Gagnier, K. M., Holochwost, S. J., & Fisher, K. R. (2017). Language and Literacy in Baltimore City. Technical Report produced by the Science of Learning Institute for the Baltimore Health Department and Family League of Baltimore.

Gagnier, K., & Fisher, K. (2017). Spatial thinking: A missing building block in STEM education. Technical Report produced by the Science of Learning Institute for the Johns Hopkins University Institute for Education Policy.

Gagnier, K. M., Fisher, K. R., & Holochwost, S. J. (2017). The Road to Reading. Technical Report produced by the Science of Learning Institute for the Children’s Museum of Manhattan and Port Discovery Children’s Museum.

Gagnier, K. M., Holochwost, S. J., & Fisher, K. R. (2017). Formative Evaluation of the Science of Teaching and School Leadership Academy Year 1. Technical Report produced by the Science of Learning Institute for the Center for Transformative Teaching and Learning.

Gagnier, K. M., Landau, B., & Fisher, K. R. (2017). Language Learning in Early Childhood: A Brief Summary. Technical report produced by the Science of Learning Institute for the Children’s Museum of Manhattan.

Gagnier, K., M., and Fisher, K., R. (2016). Spatial Thinking: A Missing Building Block in STEM Education. Johns Hopkins University Institute for Education Policy Commentary.

Educational Outreach, Workshops, and Invited Presentations

Heiland, M., Kurman, M., & Gagnier, K.M (2025). Maximizing Formative Evaluation Throughout the Life of Your EIR Project. Workshop presented at the Annual Education, Innovation, & Research (EIR) Project Directors Meeting, Washington, DC.

Dupuis, R., Stevenson, K., Fisher, K. R., & Gagnier, K.M. (2024). Spatial Skills: The Foundation ALL Students Need to Succeed in Science and How To Build Them. Workshop Given at the National Science Teachers Association’s Annual Conference



in Denver, CO.

Gagnier, K.M., Holochwost, S. J., & Fisher, K. R. (2023). Developing a Spatially-Enhanced Elementary Curriculum and Teacher Training Series to Improve Science Achievement. Presentation and Workshop Given to Science Office Leadership in Prince George's County Public Schools.

Gagnier, K.M. (2023). The Building Blocks of Scientific and Mathematical Thinking. Guest workshop given to the Elementary Science Methods Course at East Tennessee State University.

Gagnier, K. M., & Fisher, K. R. (2023). The Building Blocks of Scientific Thinking: Helping Students Succeed in Science through Spatial Thinking. Talk presented at the National Science Teachers Association Annual Meeting, Atlanta, GA.

Gagnier, K., M. Vodicka, D., and Quidwai, S. (2021). Prioritize Building Relationships with Your Students: What Science Says. Getting Smart
<https://www.gettingsmart.com/2021/05/prioritize-building-relationships-with-your-students-what-science-says/>

Gagnier, K. M. (2021, July). The Building Blocks of Mathematical Thinking. Educator Workshop presented at the Science of Teaching and School Leadership Academy, Potomac, MD.

Gagnier, K. (2021, February). The Science of Learning: Evidence-informed Teaching Strategies to Support Learning. The Teaching Academy, Johns Hopkins University, Baltimore, MD. 7

Gagnier, K. (2021, January). The Building Blocks of Scientific and Mathematical Thinking: Infusing Spatial Thinking into Educational Practice. University of Limerick. Limerick, Ireland.

Gagnier, K. (2020, October). Connecting Research and Practice to Advance Science and Society: The Case of Spatial Thinking. Temple University. Philadelphia, PA.

Gagnier, K. (2019, October). The Science of Learning and Educational Practice. Baltimore Friends School. Baltimore, MD.

Gagnier, K. & Fisher, K. (2019, June). Mind, Brain, and Education and Action Research in Your School: Spatialization, STEM, and Beyond. Breck School. Minneapolis, MN

Fisher, K. & Gagnier, K. (2019, April). Action Research: Exploring research-informed innovations in your classroom. Breck School. Minneapolis, MN



Gagnier, K. & Fisher, K. (2019, April). Science of learning & action research. Breck School. Minneapolis, MN.

Fisher, K. & Gagnier, K. (2019, April). Translating the science of learning to classroom practices. Center for Educational Resources. Johns Hopkins University. Baltimore, MD.

Gagnier, K., Fisher, K., & Grimm, D. (2019, March). Say what? Crafting a dissemination plan to communicate science to public audiences. Workshop to be presented Biennial Society for Research in Child Development Conference. Baltimore, MD.

Fisher, K. & Gagnier, K. (2019, March). Playing with space in early learning classrooms: Laying the foundation for future STEM success. Head Start Teacher Workshop. Baltimore, MD.

Gagnier, K. & Fisher, K. (2019, March). Playing with space in early learning classrooms: Laying the foundation for future STEM success. Head Start Trainer Professional Development Workshop. Baltimore, MD.

Fisher, K. & Gagnier, K. (2018, August). Playing with space in early learning classrooms: Laying the foundation for future STEM success. Head Start Teacher Workshop. Baltimore, MD.

Gagnier, K. & Fisher, K. (2018, August). Playing with space in early learning classrooms: Laying the foundation for future STEM success. Head Start Trainer Professional Development Workshop. Baltimore, MD.

Fisher, K. & Gagnier, K. (2018, July). Through the pipeline: Examining the connection between research and practice. Science of Teaching and School Leadership Academy. Center for Transformative Teaching and Learning. St. Andrew's Episcopal School.

Gagnier, K. & Levine, R. (2018, April). Science of Learning in Your Research. Professional Development Workshop for Johns Hopkins Medical School Faculty. Institute for Excellence in Education, Johns Hopkins University. Baltimore, MD.

Gagnier, K. & Fisher, K. (2018, February). Exploring applications of the science of learning to the university classroom. Center for Educational Resources. Johns Hopkins University.



Gagnier, K., Fisher, K., & Rosswog, S. (2018, November). Playing with space: Laying the building blocks for STEM success. Port Discovery Educational Staff Workshop. Baltimore, MD.

Gagnier, K. & Kelleher, I. (2018, January). The Science of Learning and Educational Practice. Prince George's Community College Faculty Fellows Workshop, Largo, MD.

Gagnier, K. & Kelleher, I. (2017, April). The Science of Learning and Application for Educational Practice. Prince George's Community College Faculty Fellows Workshop, Largo, MD.

Gagnier, K., & Fisher, K. (2017, February). Developing a dissemination plan. In K. Fisher (Organizer), Communicating science to non-scientific audiences. Workshop presented at the annual meeting of the American Association for the Advancement of Science, Boston, MA.

Gagnier, K. & Fisher, K. (2017, January). The Building Blocks of Mathematical and Scientific Thinking. Professional Development Workshop for PreK and Kindergarten Teachers. Baltimore City Public Schools. Baltimore, MD.

Gagnier, K. & Fisher, K. (2016, November). Spatializing the Science Curriculum in Elementary School. Lesson plan development workshop. Holy Child School. Bethesda, MD.

Gagnier, K. & Fisher, K. (2016, October). Science of Learning: What do we know? Council of Chief State School Officers. 8

Gagnier, K. & Fisher, K. (2016, May). Science of Learning: What do we know? Alliance for Excellent Education, Baltimore, MD.

Gagnier, K. (2016, September). Smart Baby Panel Discussion. Nanyang Technological University, Singapore.

Gagnier, K. & Fisher, K. (2016, June). Exploring the early language and literacy learning needs in our community. Family Literacy Coalition. Baltimore City Health Department. Baltimore, MD.

Gagnier, K. & Fisher, K. (2016, May). Cognition and development. National Collaborative on Education and Health.

Gagnier, K. & Fisher, K. (2016, May). Language and literacy development in early childhood. Family Literacy Coalition.



Gagnier, K. (2016, April). Ideas Festival Panel Discussion. Nanyang Technological University, Singapore.

Gagnier, K. & Fisher, K. (2016, March). Exploring language development in infancy and early childhood. B'More for Healthy Babies Initiative.

Gagnier, K. (2016, October). Promoting an "I Can Do It!" Growth Mindset in Your Children. Severna Park Elementary School.

Gagnier, K. & Fisher, K. (2015, December). Exploring the early language and literacy development. Family Literacy Coalition. Baltimore City Health Department. Baltimore, MD.

Gagnier, K. & Fisher, K. (2015, December). Exploring the early language and literacy development. Family Literacy Coalition. Baltimore City Health Department. Baltimore, MD.

Gagnier, K. (2015, March). Spatial Thinking in STEM Education. Workshop for K-5 Science and Math Teachers, Franklin Institute, Philadelphia, PA.

Gagnier, K. (2015, March). Playing for STEM. Workshop for PK-2 Teachers, Please Touch Museum, Philadelphia, PA.

Gagnier, K. (2014, August). Brainiacs. Workshop for the General Public, Franklin Institute, Philadelphia, PA.

Gagnier, K. (2013, May). Why did vision evolve? Workshop for the General Public, Franklin Institute, Philadelphia, PA.

Conference Presentations

Gagnier, K.M., Holochwost, S. J., & Fisher, K. R. (2024). Developing a Spatially-Enhanced Elementary Science Curriculum: Impacts on Spatial Skills and Academic Achievement in Math and Science. Talk presented at the International Mind, Brain, and Education Society's Conference in Leuven, Belgium.

Gagnier, K.M, Fatahi, N. Kurman, M., Heiland, M, Jones, F., & Adeniji-Adele, A. (2024). Community, Industry, and Research Partnerships Can Shift the Science, Technology, and Entrepreneurship Workforce in Philadelphia. Panel discussion organized for and presented at the American Education Research Association (AERA) Annual Meeting, Philadelphia, PA.



Gagnier, K.M., Holochwost, S. J., Ceren, M., & Fisher, K. R. (2024). Developing Measures of Scientific Self-Perceptions and Interest in Elementary Students Historically Underrepresented in STEM. Talk presented at the American Education Research Association (AERA) Annual Meeting, Philadelphia, PA.

Gagnier, K.M., Holochwost, S. J., Ceren, M., & Fisher, K. R. (2024). Developing Measures of Scientific Self-Perceptions and Interest in Elementary Students Historically Underrepresented in STEM. Talk presented at the National Research in Science Teaching Annual Conference, Denver, CO.

Gagnier, K.M., Douglass, A. A., Samuel, D., Kurman, M., Brooks, P., Copeland, F, Jones, F., & Holochwost, S. J. (2023). Diversifying the STEM Workforce in Philadelphia: The Use and Value of Stories as an Ecologically Valid Approach to Program Evaluation. Talk presented at the American Evaluation Association, Indianapolis, IN.

Gagnier, K.M., Holochwost, S. J., Adam, T., & Fisher, K. R. (2022). Spatial Thinking in STEM: Elementary Teachers' Beliefs, Perceptions, and Self-Efficacy. Talk presented at the American Education Research Association (AERA) Annual Meeting, San Diego, CA.

Gagnier, K. Henrick, E., Arce-Trigatti, P., Jackson, M. Supplee. L. and Holian, L. (2021). Evaluating the Health of Small Research-Practice Partnerships: What is Possible and Meaningful. Session organized for the annual meeting of the Society for Research in Educational Effectiveness, Arlington, VA.

Gagnier, K. Holochwost, S., & Fisher K. R. (2021). Spatial Thinking in Science, Technology, Engineering, and Mathematics: Elementary Teachers' Beliefs, Perceptions, and Self-Efficacy. Paper presented at the annual meeting of the Society for Research in Educational Effectiveness, Arlington, VA.

Gagnier, K. Holochwost, S., Nelson, A. S., & Fisher K. R. (2020). Science Self-Concept and Self-Efficacy: Their Structure and Relation to 3rd Grade Academic Achievement. Presentation accepted to the Society for Research on Educational Effectiveness. Arlington, VA.

Gagnier, K. Whitman, G., & Fisher K. R. (2019). MBE and Teacher Professional Learning: Measuring the Impact. Presentation at the annual Learning and the Brain Conference. Boston, MA.



Buckland, A., Rosthstein, J., Fisher, K., Gagnier, K., Ochoa, M., Cabrera, L., & Leontsini, E. (2019). Formative research for a play- and music-based early child development intervention in peri-urban Lima, Peru: A strengths and needs assessment. Presentation at the annual American Public Health Association Conference. Philadelphia, PA.

Gagnier, K., Fisher, K. R., Unlutabak, B., & Holochwost, S. (2019, March). Bridging the translation gap: An interdisciplinary approach to infusing spatial thinking into 3rd-grade science. In K. Gagnier & K. Fisher (Chairs), Exploring new translational science approaches to incorporate spatial thinking into elementary science. Exchange symposium accepted at the Biennial Society for Research in Child Development Conference. Baltimore, MD.

Gagnier, K., Fisher, K.R., & Grimm, D. (2019, March). Say what? Crafting a dissemination plan to communicate science to public audiences. Workshop presented at the Biennial Society for Research in Child Development Conference. Baltimore, MD.

Gagnier, K.M., Holochwost, S. J., Lewis, S., & Fisher, K. R. (2017, April). Developing a measure of caregiver knowledge, attitudes, and behaviors around language and literacy development for use with diverse populations. Paper presented at the biennial meeting of the Society for Research in Child Development, Austin, TX.

Gagnier, K., Newcombe, N., Zaslow M., & Schwartz, M. (2017, April). In K. Fisher (Organizer), Catalyzing a paradigm shift: Research translation for advancing science and society. Conversational roundtable to be presented at the biennial Society for Research in Child Development conference. Austin, TX.

Gagnier, K.M. (2017). Developing a Dissemination Plan. Paper presented at the annual meeting of the American Association for the Advancement of Science, Boston, MA.

Holochwost, S. J., Wolf, D. P., Fisher, K. R., Gagnier, K. M. (2016, November). Alternatives to randomized control designs in program evaluation. Paper presented at the annual meeting of the American Evaluation Association, Atlanta, GA.

Ormand, C.J., Shipley, T. F., Dutrow, B., Goodwin, L., Hickson, T.A., Tikoff, B., Atit, K., Gagnier, K.M., and Resnick, I. Resnick (2016). The Spatial Thinking Workbook: Developing students' spatial thinking skills in upper-level undergraduate geology courses through curricular materials based on cognitive science research. Poster to be presented at the Geological Society of America annual meeting, Denver, CO.



Gagnier, K. M., Fisher, K. R. & Holochwost, S. J. (2016). Translating science of learning research into practice: A model for scientist-practitioner partnerships to develop evidence-based practices for the community. Poster presented at Bringing Cognitive Science Research to the Classroom, Washington, DC.

Gagnier, K. M. (2015). Spatial thinking in Geoscience. Lessons from an Interdisciplinary collaboration between cognitive scientists and geoscientists. Talk presented at the annual meeting of the Geological Society of America, Baltimore, MD.

Shipley, T. F., Atit, K., Weisberg, S. M., and Gagnier, K., M. (2015). Challenges to reasoning and learning about 3D spatial relations: Bridging the gap between lab research and field-based education. Talk presented at the annual meeting of the Geological Society of America, Baltimore, MD.

Ormand, C.J., Shipley, T. F., Dutrow, B., Goodwin, L., Hickson, T.A., Tikoff, B., Atit, K., Gagnier, K.M., and Resnick, I. Resnick (2015). Teaching Spatial Thinking in Mineralogy, Structural Geology, and Sedimentology & Stratigraphy: Tools and Strategies from Cognitive Science Research: Earth Educators' Rendezvous (Boulder, CO).
Gagnier, K.M., Atit, K., Ormand, C., & Shipley, T., F. (2015). Using sketching to support students in developing rich 3D representations from STEM diagrams. Talk presented at the conference on Diagrams as Vehicles of Scientific Reasoning, Pittsburgh, PA.

Gagnier, K.M. (2015). Spatial Thinking in Science: Lessons from an Interdisciplinary Collaboration between Cognitive Scientists and Geoscientists. Talk presented at the Eastern Psychology Society Conference, Philadelphia, PA.

Ormand, C.J., Shipley, T.F., Dutrow, B., Goodwin, L., Hickson, T., Tikoff, B., Atit, K., Gagnier, K.M., & Resnick, I. (2015). Teaching Spatial Thinking in Undergraduate Geology Courses Using Tools and Strategies from Cognitive Science Research. Talk presented at the annual meeting of the American Geophysical Union, San Francisco, CA.

Ormand, C.J., Shipley, T.F., Tikoff, B., Dutrow, B., Goodwin, L., Hickson, T., Atit, K., Gagnier, K.M., & Resnick, I. (2014). Transforming Spatial Reasoning Skills in the Upper-Level Undergraduate Geoscience Classroom Through Curricular Materials Informed by Cognitive Science Research. Talk presented at the annual meeting of the American Geophysical Union, San Francisco, CA.

Gagnier, K.M., Atit, K., Ormand, C., & Shipley, T., F. (2014). Comprehending diagrams: Sketching to support spatial reasoning from diagrams. Poster to be presented at the International Mind, Brain, and Education Society, Fort Worth, TX.



Gagnier, K.M., Atit, K., Ormand, C., & Shipley, T., F. (2014). Understanding 3D: Generating diagrams from 3D models improves diagrammatic reasoning. Talk presented at the annual meeting of the American Educational Research Association, Philadelphia, PA.

Gagnier, K. M., & Shipley, T.F. (2013). Biases in the perception of 3D forms from 2D cross-sectional views. Poster presented at the annual meeting of the Psychonomic Society, Toronto, Canada.

Ormand, C.J., Shipley, T.F., Tikoff, B., Manduca, C., Dutrow, B., Goodwin, L., Hickson, T., Atit, K., Gagnier, K.M., & Resnick, I. (2013). Improving spatial visualization skills in the undergraduate geoscience classroom through 10 interventions based on cognitive science research. Poster presented at Geological Society of America annual conference, Denver, CO.

Gagnier, K.M., & Shipley, T.F. (2013). Completion in the wild: perception of 3D forms from 2D cross-sections. Poster presented at the Cognitive Science Society, Berlin, Germany.

Ormand, C.J., Shipley, T.F., Tikoff, B., Manduca, C., Dutrow, B., Goodwin, L., Hickson, T., Atit, K., Gagnier, K.M., & Resnick, I. (2013). Improving spatial reasoning skills in the undergraduate geoscience classroom through interventions based on cognitive science research. Talk presented at AAPG Hedberg Research Conference, Reno, NV.

Gagnier, K.M., Atit, K., Ormand, C., & Shipley, T., F. (2013). The inside story: Using alignment & sketching to help students make inferences about diagrams. Poster presented at Improving Middle School Science Instruction Using Cognitive Science, Washington, DC.

Gagnier, K.M., Atit, K., Ormand, C., & Shipley, T., F. (2012). Improving penetrative thinking via progressive alignment and directed sketching. Talk presented at the annual meeting of the Geological Society of America, Charlotte, NC.

Gagnier, K.M., Boone, A., & Shipley, T. F. (2012). Looking behavior and penetrative thinking: Examining the relationship between eye movements and performance. Poster presented at the annual meeting of the Geological Society of America, Charlotte, NC.

Gagnier, K. M. (2012). Gesture and Sketching: Indicators of knowledge. Talk presented at the Association of Science and Technology Centers, Columbus, OH.

Gagnier, K. M., Atit, K., Shipley, T.F., Ormand, C., Manduca, C., & Tikoff, B. (2012). Improving penetrative thinking skills for geoscience education. Presented at the Inter-Science of Learning Centers Conference, San Diego, CA.



Michod K.O. (2010). Remembering unseen space: Evidence that scene representation goes beyond the visual input. Talk presented at The International Conference on Spatial Cognition, Portland, OR. August 19, 2010.

Michod K.O., & Intraub, H. (2009). Don't look! Fixating occluded objects distorts scene memory. Poster presented at the annual meeting of the Vision Sciences Society, Naples, FL.

Michod K.O., Dickinson, C.A., & Intraub, H. (2008). Multiple fixations do not lead to better spatial memory. Poster presented at the annual meeting of the Vision Sciences Society, Naples, FL.

Michod K.O., & Intraub, H. (2007). Conceptual Masking: Is concept the key or does layout play a role? Talk presented at the annual Object Perception, Attention, and Memory meeting, Long Beach, CA.

Michod K.O., & Intraub, H. (2007). Conceptual masking: Is it really all about the concept, or does layout matter? Poster presented at the annual meeting of the Vision Sciences Society, Sarasota, FL.

Michod K.O., Horowitz, T.S., & Wolfe, J.M. (2005). Picture memory demands attention. Poster presented at the annual meeting of the Vision Sciences Society, Sarasota, FL.

Kunar, M.A., Michod, K.O., & Wolfe, J.M., (2005). When we use the context in contextual cueing: Evidence from multiple target locations. Poster presented at the annual meeting of the Vision Sciences Society, Sarasota, FL.

Michod, K.O., Wolfe, J.M., Horowitz, T.S., & Palmer E.M. (2004). Does guidance take time to develop during a visual search trial? Poster presented at the annual meeting of the Vision Sciences Society, Sarasota, FL.

Professional Societies

- National Association for Research in Science Teaching (NARST)
- National Science Teachers Association (NSTA)
- Society for Research in Child Development (SRCD)
- American Association for the Advancement of Science (AAAS)
- Society for Research in Educational Effectiveness (SREE)
- American Psychological Association (APA)
- Association for Psychological Science
- NSF Spatial Intelligence Learning Center
- Cognitive Science Society



- American Education Research Association (AERA)
- International Mind, Brain and Education Society (IMBES)
- Association of Science and Technology Centers (ASTC)
- Vision Science Society (VSS)
- Geological Society of America (GSA)

Service & Awards

- Presidential Early Career Awards for Scientists and Engineers (PECASE) award, Department of Education (2025)
- Expert Scientific Board Member, Adolescent Brain Cognitive Development (ABCD) Study
- National Science Foundation, grant panel reviewer
- National Association of Research in Science Teaching, reviewer 2023 - present
- Global Science of Learning Network, Teacher Support Network Working Group, 2020-present
- Scientific Advisory, Baltimore Friends School, Baltimore, MD. 2020
- Head's Advisory Council, Baltimore Friends School, Baltimore, MD. 2019
- Design Team Advisor, Teaching and Learning Academy, St. Andrew's Episcopal School, Potomac, MD, 2016-2019
- Advisory Board, All the Way to K and Beyond, Children's Museum of Manhattan, New York, NY, 2017-2019
- Catalyzing a Paradigm Shift: Research Translation for Advancing Science and Society Roundtable Organizer, Society for Research in Child Development (SRCD), 2017
- Communicating Science to Non-scientific Audiences Workshop Chair, the American Association for the Advancement of Science (AAAS), 2017
- Consultant for Baltimore Grade Level Reading Campaign, 2016
- Science of Learning Workshop Chair, International Mind, Brain, and Education Society (IMBES) 2014
- Inter-Science of Learning Center (iSLC) Conference Chair, 2013
- Advisory Board, Creating Communities of Learners for Informal Cognitive Science Education, NSF Grant, Museum of Science, Boston, MA. Term: November 2011-2016

