




TYLER HARPER-GAMPP

Postdoctoral Research Scholar
STEM Education | North Carolina State University

twgampp@ncsu.edu 
(740) 464-6577 
linktr.ee/tharpergampp 

CONTENTS

[Education](#) | [Employment](#) | [Grants](#) | [Publications](#) | [Research](#) | [Presentations](#) | [Teaching](#) | [Recognition](#) | [Service](#)

EDUCATION

Ph.D. in Learning and Teaching in STEM , North Carolina State University Science Education with Minor in Chemistry Dissertation: <i>Exploring middle school students' scale cognition and knowledge integration during virtual reality-supported science instruction. (Chairs: Dr. Cesar Delgado & Dr. Karen B. Chen)</i>	July 2024
M.A.T. in Secondary Science , University of North Carolina Wilmington Teaching licensure: Science and Mathematics 6-12 (<i>North Carolina, Texas, & Georgia</i>)	2018
B.S. in Chemistry , University of North Carolina Wilmington Departmental Honors in Chemistry & Minor in Math	2016

PROFESSIONAL EMPLOYMENT

Postdoctoral Researcher Department of STEM Education, North Carolina State University	From 2024
Graduate Research Assistant Department of STEM Education, North Carolina State University	2021 - 2024
Student Teaching Supervisor Department of STEM Education, North Carolina State University	2022 - 2023
Teaching Assistant Department of STEM Education, North Carolina State University	2023
Ernest F. Hollings Scholar National Oceanic and Atmospheric Association	2014 - 2016
Secondary Science Teacher Liberal Arts and Sciences Academy & Eugene Ashley High School	2018 - 2021
Assistant Residence Coordinator Housing and Residence Life, University of North Carolina Wilmington	2016 - 2017

RESEARCH GRANTS & FUNDING

A. FUNDED PROPOSALS

- (1) **Harper-Gampp, T.** Exploring middle school students' scale cognition and knowledge integration during virtual reality-supported science instruction. *NC State University College of Education, Dissertation Support Award.* (\$500).
- (2) **Harper-Gampp, T.** Virtual reality induces awe but possibly not accommodation. *NC State University College of Education, Global Graduate Presenter.* (\$1000).

- (3) **Harper-Gampp, T.** Refining a panel of experts validation methodology for instrument development. *Agnes and Garfield Stiff Travel Award.* (\$1000).

B. PROPOSALS NOT FUNDED

- (1) **Harper-Gampp, T.** *Leveraging embodied cognition using virtual reality in middle school science education.* NC State University Graduate School, Travel Award. (\$1500 proposed, not funded).

PUBLICATIONS

A. PEER-REVIEWED JOURNAL ARTICLES

- (1) Duffy, P. L.; **Gampp, T.**; Coleman, A. F.; Enneking, K. M.; Tiettmeyer, J. M.; Mazzarone, K. M.; Grove, N. (2019). Form versus function: A comparison of Lewis structure drawing tools and the extraneous cognitive load they induce. *Journal of Chemical Education*, 96(2), 238-247.
- (2) Coleman, A. F.; Balok, R. S.; Tiettmeyer, J. M.; Duffy, P. L.; Mazzarone, K. M.; **Gampp, T.**; & Grove, N. (2017). Unraveling the complexities: An investigation of the factors that induce load in chemistry students constructing Lewis structures. *Journal of Chemical Education*, 94(3), 282-288.

B. PEER-REVIEWED CONFERENCE PROCEEDINGS

* Presenting author(s)

- (1) Cheng, F. *, **Harper-Gampp, T.**, Planchart, R., Dunning, M., Peterson, M., Delgado, C., & Chen, K. B. (*Under review*). *Study of graphic armatures, multimodal cues and numeric measures in virtual reality on learners' performance and workload.* In (Eds.). (2024). *Proceedings of the 68th HFES International Annual Meeting.*
- (2) Chen, K. B. *, **Harper-Gampp, T.**, Wu, L., Delgado, C., & Peterson, M. (*under review*). *Learning scale in virtual reality: Experiences and perception of immersive technology at a public middle school.* In (Eds.). (2024). *Proceedings of the 68th HFES International Annual Meeting.*
- (3) **Harper-Gampp, T.**, Delgado, C., Alharbi, K. *, Peterson, M., & Chen, K. B. (2024, July). *Does shrinking and growing in VR induce awe among young students?* In R. Lindgren, T. Asino, E. A. Kyza, C. Look, D. T. Keifert, & E. Suárez (Eds.). (2024). *Proceedings of the 18th International Conference of the Learning Sciences* (pp. X-Y) International Society of the Learning Sciences.
- (4) Wu, L. *, Chen, K. B., Sekelsky, B., Peterson, M., **Harper-Gampp, T.**, & Delgado, C. (2023, March). *Shrink or grow the kids? Scale cognition in an immersive virtual environment for K-12 summer camp.* In *2023 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)* (pp. 721-722). Institute of Electrical and Electronics Engineers.
- (5) Delgado, C. *, **Harper-Gampp, T.** *, Peterson, M., & Chen, K.B. (2023, June). *Virtual reality induces awe but possibly not accommodation.* In P. Blikstein, J. Van Aalst, R. Kizito, & K. Brennan (Eds.). (2023). *Proceedings of the 17th International Conference of the Learning Sciences* (pp. 1050-1053). International Society of the Learning Sciences. (*Acceptance rate ~30%*)

- (6) Wu, L.* , Sekelsky, B., Peterson, M., **Gampp, T.**, Delgado, C., & Chen, K. B. (2022, October). Immersive virtual environment for scale cognition and learning: Expert-based evaluation for balancing usability versus cognitive theories. In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting, 2022*.
- (7) **Gampp, T.***, Delgado, C., Peterson, M., & Chen, K. (2022, June). Embodied cognition in virtual reality to support learning of scale. In C. Chinn, E. Tan, C. Chan, & Y. Kali (Eds.), *Proceedings of the 16th International Conference on the Learning Sciences* (pp. 1900-1902). International Society of the Learning Sciences.

C. BOOK CHAPTERS AND ADDITIONAL PUBLICATIONS

- (1) Balok, R. S.; Coleman, A. F.; Enneking, K. M.; **Gampp, T.**; Tiettmeyer, J. M.; Duffy, P. L.; Mazarone, K. M.; & Grove, N. (2018). Connecting form and function: Understanding the role that cognitive load plays in students' ability to construct representations of chemical structure. In R. Zheng (Eds.), *Cognitive Load Measurement and Application: A Theoretical Framework for Meaningful Research and Practice*. Routledge.
- (2) **Gampp, T.**, & Grove, N. (2015). A quantitative classroom: Investigation of cognitive load fluctuations within a chemistry lecture environment. [Honors thesis]. UNC Wilmington Campus Repository.

D. MANUSCRIPTS IN PROGRESS

- (1) Mathenge, R., Delgado, C., Kulasingam R., **Harper-Gampp, T.**, Planchart, R., Peterson, M., & Chen, K. B. (**under review**). Assessing the impact of an immersive virtual reality learning environment on the reform-centered nature of middle school science instruction. *Submitted to International Journal of Science Education*.
- (2) **Harper-Gampp, T.**, Delgado, C., You, H., Peterson, M., & Chen, K. B. (*submission goal of May 2024*). Development and validation of the Assessment of Size and Scale Cognition.
- (3) Delgado, C., **Harper-Gampp, T.**, Peterson, M., & Chen, K. B. (*submission goal of May 2024*). Awe in virtual reality.
- (4) **Harper-Gampp, T.**, Mathenge, R., Delgado, C., Estrada, E., Planchart, R., Kulasingam, R., Peterson, M., & Chen, K. B. (*submission goal of Jun. 2024*). Student cognitive and affective outcomes following virtual reality-supported science instruction.
- (5) Peterson, M., Sekelsky, B., Anderson, A., Delgado, C., **Harper-Gampp, T.**, Wu, L., & Chen, K. B. (*in preparation*). An extension of conjecture mapping through function mapping: The theory-driven design of educational tools and materials.

RESEARCH EXPERIENCE

Postdoctoral Researcher

From 2024

Projects:

- (1) FuSe: Polymer SWIR Photodiodes for Focal Plane Arrays (*NSF-CHE #2328868*)
- (2) Deep Eutectic Solvent Pulping Technology to Reduce Carbon Emission in Pulp and Paper Industry (*DE-FOA #0002804*)

- (3) Sargassum and Hurricane Waste Biomass for Aviation Fuel and Graphite (*DE-FOA #0002636*)
- (4) A Novel Approach to Decarbonizing the Pulp and Paper Industry: Kraft Chemical Recovery via Bipolar Membrane Electrodialysis (*DE-FOA #0002997*)
- (5) Eco: Future Eco-Manufacturing of Recyclable Soft Electronics (*NSF-CMMI #2134664*)
 - Successfully co-managed the education and workforce development plan for 5 multi-year grants, ensuring compliance with funding requirements, timely reporting, and effective budget utilization.
 - Led the validation of a novel instrument for gauging high school students perceptions of STEM field trips

Graduate Research Assistant (*Dr. Meg Blanchard*) 2023 - 2024

Project: Eco: Future Eco-Manufacturing of Recyclable Soft Electronics (*NSF-CMMI #2134664*)

- Co-developed and managed an online course that engaged rural high school teachers in the eco-manufacturing of soft electronics for classroom use.

Graduate Research Assistant (*Dr. Cesar Delgado*), North Carolina State University 2021 - 2024

Project: *SCALE-VR: Scale Cognition through Advanced Learning Environments in VR (NSF-DRL #2055680)*

- Co-developed Scale Worlds VR, a virtual environment grounded in scale cognition theory, where students can grow to the size of the Sun, shrink to the size of an atom, and explore all orders of magnitude in-between.
- Researched the impact of instruction incorporating Scale Worlds VR. Led the co-design and implementation, data collection, and analysis of a middle school science unit incorporating Scale Worlds
- Led the development and validation of the Assessment of Size and Scale Cognition, leading to a refined methodology for a panel of expert review.

Graduate Research Assistant (*Dr. Nathaniel Grove*), UNC Wilmington 2017 - 2018

Project: *Cognitive Load and Representational Competence: The Development of an Adaptive Learning System to Assist Students with Structure Creation (NSF-DUE #1610084)*

- Developed a rubric based on empirical evidence for assessing the cognitive load associated with various structural features when constructing Lewis structures.
- Created a repository of Lewis structures ranked by degrees of cognitive load to be used in the development of an adaptive learning system.

Ernest F. Hollings Scholar, National Oceanic and Atmospheric Association 2014 - 2016

Appointment: *Port Aransas National Estuarine Research Reserve in Port Aransas, Texas*

- Developed educational datasets and interactive programs for K-12 students aligned with state science standards using Science on a Sphere, a six foot sphere that projects visualizations of planetary data to illustrate Earth system science to learners.

Undergraduate Research Assistant (*Dr. Nathaniel Grove*), UNC Wilmington 2014 - 2016

Project: *Collaborative Research (BeSocratic): A Free-form, Interactive System to Investigate the Development of Representational Competence (NSF-DUE# 1122661)*

- Developed a physiological measurement methodology for identifying instances of cognitive load during a traditional university lecture.

- Investigated the cognitive load associated with students' construction of Lewis structures using our co-developed web-based tool, traditional online homework systems, and traditional pen and paper.

PRESENTATIONS

* Presenting author(s)

A. RESEARCH CONFERENCE PRESENTATIONS

- (1) **Harper-Gampp, T.***, Delgado, C., Peterson, M., Chen, K. B., Mathenge, R., Planchart, R., Kulasingam, R., & Wu, L. (2024, April). *Scale reasoning in immersive virtual reality: Capturing middle school students' learning*. [Symposium presentation]. American Educational Research Association 2024, Philadelphia, PA, United States.
- (2) **Harper-Gampp, T. *** (2024, April). Exploring Middle School Students' Scale Cognition During Virtual Reality-Supported Science Instruction. [Three-minute dissertation presentation]. NC State STEM Education Graduate Symposium 2024, Raleigh, NC, United States.
- (3) **Harper-Gampp, T.*** (2024, April). Exploring Middle School Students' Scale Cognition During Virtual Reality-Supported Science Instruction. [Poster presentation]. NC State Graduate Student Research Symposium 2024, Raleigh, NC, United States. (*Awarded 2nd place for the College of Education*)
- (4) Estrada, E. *, **Harper-Gampp, T.***, Delgado, C.*, Mathenge, R., Peterson, M., Chen, K. B., & Wu, L. (2024, March). Co-designing a science lesson with VR in middle school science. [Presentation]. *Leveraging embodied cognition using virtual reality in middle school science education*. [Related paper set]. National Association of Research in Science Teaching 2024, Denver, CO, United States.
- (5) Delgado, C.*, **Harper-Gampp, T.**, Mathenge, R., Peterson, M., & Chen, K. B. (2024, March). Impact of VR science lesson on students' knowledge of scale. [Presentation]. *Leveraging embodied cognition using virtual reality in middle school science education*. [Related paper set]. National Association of Research in Science Teaching 2024, Denver, CO, United States.
- (6) **Harper-Gampp, T.***, Delgado, C., Peterson, M., Chen, K. B., Mathenge, R., Planchart, R., & Kulasingam, R. (2024, March). Student impressions about a VR science lesson. [Presentation]. *Leveraging embodied cognition using virtual reality in middle school science education*. [Related paper set]. National Association of Research in Science Teaching 2024, Denver, CO, United States.
- (7) Mathenge, R.*, Kulasingam, R.*, **Harper-Gampp, T.**, Delgado, C., Peterson, M., & Chen, K. B. (2024, March). Impact of an VR science lesson on reformed-oriented nature of science instruction. [Presentation]. *Leveraging embodied cognition using virtual reality in middle school science education*. [Related paper set]. National Association of Research in Science Teaching 2024, Denver, CO, United States.
- (8) Diaz, B.* & **Harper-Gampp, T.*** (2024, March). Examining students' general chemistry performance following a voluntary supplemental course. [Paper presentation]. National Association for Research in Science Teaching 2024, Denver, CO, United States.
- (9) Wu, L., Sekelsky, B., Peterson, M., **Gampp, T.**, Delgado, C., & Chen, K. B. (2023, October). *Scale Worlds: Iterative refinement, evaluation, and theory-usability balance of an immersive virtual learning environment*. [Poster presentation]. Human Factors and Ergonomics Society Annual Meeting, Washington, DC, United States.

- (10) **Harper-Gampp, T.***, Delgado, C., Peterson, M., & Chen, K. B. (2023, April). *Refining a panel of experts validation methodology for instrument development*. [Roundtable presentation]. American Education Research Association, Chicago, IL, United States.
- (11) **Harper-Gampp, T*.**, Delgado, C., Peterson, M., & Chen, K. B. (2023, April). *Designing and developing an instrument to assess scale cognition*. [Paper presentation]. National Association for Research in Science Teaching Annual Conference, Chicago, IL, United States.
- (12) Hakim, K., Bishop, A., Enneking, K.* , Nogle, J., Paulson, E.* , **Gampp, T.*** , & Grove, N. (2018, March). *Measuring chemistry students' cognitive load on working memory: The development of an inventory of load inducing topics in chemistry 1*. [Poster presentation]. American Chemical Society Annual Conference, New Orleans, LA, United States.
- (13) Duffy, P.* , Coleman, A., **Gampp, T.*** , Tiettmeyer, J., & Grove, N. (2015, March). *Form vs. function: A comparison of Lewis structure drawing tools and the cognitive load they induce*. [Poster presentation]. American Chemical Society Annual Conference, Denver, CO, United States.

B. PRACTITIONER PRESENTATIONS/WORKSHOPS

- (1) Mathenge, R.* , Alharbi, K.* , **Harper-Gampp, T.**, Delgado, C., Peterson, M., & Chen, K. B. (2023, November). *SCALE-VR: Scale cognition through advanced virtual reality learning environment*. [Professional development]. North Carolina Science Teacher Association, Winston-Salem, NC, United States.
- (2) **Gampp, T.*** , Kubasko, D.* , Sewell, E.* , Sharp, A.* , & Taylor, A.* (2017, October). *Island ecology for educators: Using coastal resources to engage students*. [Workshop]. North Carolina Science Teachers Association Conference, Greensboro, NC, United States.
- (3) **Harper-Gampp, T.** & Delgado, C. (2023). *Presenting at international conferences*. [Outreach]. EMS 732: Theoretical and critical perspectives in science education. North Carolina State University, Raleigh, NC, United States.
- (4) **Gampp, T.** & Wilson, H. (2020). *Playlist for a personalized, student-centered classroom*. [Professional development]. Austin Independent School District: EDU Personalization Conference. Austin, TX, United States.
- (5) **Gampp, T.** & Wilson, H. (2020). *Playlist for a student-centered classroom*. [Professional development]. Austin Independent School District: BLEND Summit. Austin, TX, United States.
- (6) **Gampp, T.** (2020). *Differentiated conferences*. [Professional development]. Liberal Arts and Sciences Academy Campus Professional Development. Austin, TX, United States.

TEACHING RECORD

A. NORTH CAROLINA STATE UNIVERSITY

Advanced Methods in Science Education II (EMS 522), **Teaching Assistant** (Masters Level)

Fall 2023

B. SECONDARY TEACHING EXPERIENCE

PreAP Chemistry & Planet Earth (i.e., Earth Science), <i>Liberal Arts and Sciences Academy</i>	2019 - 2021
Honors Chemistry, AP Physics I, & Physical Science, <i>Eugene Ashley High School</i>	2018 - 2019

RECOGNITION

Graduate Research Symposium Poster Winner (\$350), North Carolina State University	2024
Distinguished Engagement Award , UNC Wilmington Department of Student Affairs	2016
Resident Hall of Fame , UNC Wilmington Housing and Residence Life	2016
Organization of the Year (National Residence Hall Honorary), UNC Wilmington	2016
Distinguished Research Scholar , UNC Wilmington	2015

PROFESSIONAL SERVICE

Conference Involvement:

Peer Reviewer:

- *International Conference of the Learning Sciences* (9 reviews) 2022 - Present
- *National Association for Research in Science Teaching* (7 reviews) 2022 - Present

Volunteer Support:

- *NC State University STEM Ed Graduate Research Symposium (Presider)* 2024
- *NC State University STEM Ed Graduate Research Symposium (Master of Ceremony)* 2023
- *North Carolina Science Teachers Association* 2022